



















FASCICULUS I.

September, 15th. 1911.

# 臺灣植物圖譜

臺灣植物誌料

第壹卷

## Icones Plantarum Formosanarum

nec non et

Contributiones ad Floram Formosanam.

or,

Icones of the Plants of Formosa, and Materials for a Flora of the  
Island, based on a Study of the Collections of the Botanical  
Survey of the Government of Formosa.

By

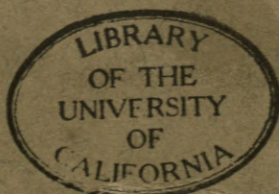
B. Hayata, *Rigakuhakushi.*

FASCICULUS I.

Published by the Bureau of Productive Industry,

Government of Formosa

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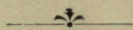


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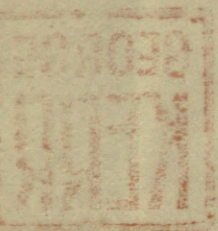
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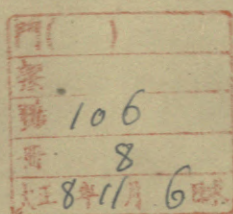
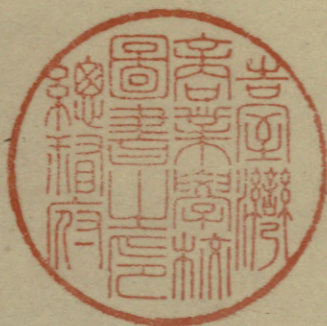
Fasciculus I. Dicotyledons—Polypetalous: Ranunculaceæ—Rosaceæ.

Published September, 10th, 1911.

Fasciculus II. will be issued in September, 1912.







# ICONES PLANTARUM FORMOSANARUM

NEC NON ET

CONTRIBUTIONES AD FLORAM  
FORMOSANAM.

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FASCICULUS I.

Ranunculaceæ—Rosaceæ.







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TO HIS EXCELLENCY COUNT SAMATA SAKUMA,  
GOVERNOR GENERAL OF FORMOSA.

SIR,

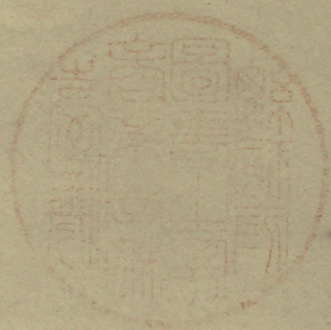
I have the honour to submit to your Excellency the first  
Fasciculus of the "Icones Plantarum Formosanarum, nec non et  
Contributiones ad Floram Formosanam" by B. HAYATA, D. Sc.

KAKICHI UCHIDA,  
CIVIL GOVERNOR OF FORMOSA.

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# Icones Plantarum Formosanarum

nec non et

Contributiones ad Floram Formosanam

*Icones of the Plants of Formosa, and Materials for a Flora of the  
Island, based on a Study of the Collections of the Botanical  
Survey of the Government of Formosa.*

## FASCICULUS I

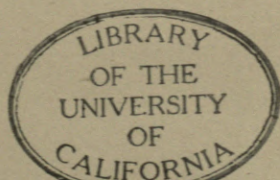
By

**B. Hayata**, *Rigakuhakushi*.

### Introduction

The history of botanical study in the island of Formosa dates back as early as the middle of the last century. In 1858, WILFORD, the earliest collector in Formosa, made some collections near the coast of the island. Later, in 1864, OLDHAM visited the northern part of the coast. Then SWINHOE, WATERS, HANCOCK, STEERE, and later, FORD, CAMPBELL, PLAYFAIR, and a few others made collections in different places, mostly in the lowlands. These collections were studied by many botanists such as HANCE, MAXIMOWICZ, HEMSLEY, and others. Later on, during 1893 and 1894, DR. A. HENRY made an extensive collection in the southern part of Formosa. He is perhaps the latest European botanist who has carefully studied the island.

It was not until the acquisition of Formosa by Japan, in 1897, that Japanese botanists began to pay attention to the botany of the island. After that time, many collectors among whom we may mention Messrs.





MAKINO, OWATARI, and MIYAKE, were sent there by the Imperial University. They all brought back to the Herbarium at Tōkyō good collections, which were studied by Prof. J. MATSUMURA.

But no great progress was made in the botanical study of the island, until in 1904 the Government of Formosa decided to carry out a botanical survey of the whole island. Mr. T. KAWAKAMI with several assistants was then engaged to collect plants, and I devoted myself to the investigation of the materials sent by the collectors to the Herbarium at Tōkyō. It was in these circumstances that, in 1905, I wrote "*Enumeratio Plantarum Formosananarum*"<sup>1)</sup> in conjunction with Prof. J. MATSUMURA. At that time, owing to the hostility of the savages, the botanical survey did not extend to regions having an elevation of more than 3000 ft. Fortunately, however, the Government of Formosa has gradually succeeded in getting control of the mountains. During 1905–1907, several excursions to the mountainous districts were carried out by the Government. In 1908, as a result of the study of the mountain-collections, I published "*Flora Montana Formosæ*"<sup>2)</sup>, in which a considerable number of new species were described.

Since that publication, I have had many more collections from the island. These collections are, in greater part, from the mountainous regions, and contain a considerable number of novelties. As the flora of the island has a close affinity to the floras of Japan and China, it is very important, in working up the materials, to make an exhaustive comparison of the collections with specimens from those two countries. At the same time, as the flora of the island contains a considerable number of Indian elements including the Himalayas and the Malay peninsula and archipelago, it is equally desirable for the work that specimens of these regions should also be compared. For a comparison with the Japanese specimens, the Herbarium at Tōkyō will answer fairly well, as it includes nearly all Japanese plants though not exhaustively. Chinese plants, however, are here very poorly represented. I therefore found it very unsatisfactory to work up so big a

<sup>1)</sup> MATSUMURA, J. et HAYATA, B.—*Enumeratio Plantarum Formosananarum*. Journ. Coll. Sci. Imp. Univ. Tōkyō XXII. 702 pages, with 18 plates, 1906.

<sup>2)</sup> HAYATA, B.—*Flora Montana Formosæ*. Journ. Coll. Sci. Imp. Univ. Tōkyō XXV. Art.-19, 260 pages, with 41 plates, 1908.



collection only in the Herbarium at Tōkyō. Moreover, as a considerable number of Chinese plants are represented in the Herbarium at Kew and also in that at Dahlem, and as the type specimens of FRANCHET are especially preserved in the Herbarium at Paris, and those of MAXIMOWICZ at St. Petersburg, I thought it very necessary for my work to see all the plants represented in the principal herbaria of the West.

It was my great good fortune that I was given an opportunity of visiting these different herbaria, in order to make an exhaustive comparison of my materials with the collections preserved in them. With this intention, I first went to Kew taking all the materials with me. There I pursued my work with specimens of the floras to which the flora of Formosa is more or less related. The comparison made in most cases, was confined to the flora of Asiatic regions, especially of China, Korea, India, the Himalayas, and the Malay peninsula and archipelago; but in some cases it was extended to Australia, the Arctic and Antarctic regions, Europe, Africa, America, and even to Polynesia. I found that many of the species in my collections are represented in the Chinese herbarium at Kew, and also among the specimens from other regions. At the same time, I found also that the greater part of my materials are not yet represented at Kew, and that in all probability they are species not yet described. After finishing my work at Kew,<sup>1)</sup> I went to the Herbarium at Paris, in order to see the type specimens of Chinese plants mainly described by FRANCHET. Later my work took me to the Herbarium at Dahlem, where are preserved many collections of Asiatic flora. My purpose in going to Dahlem was to see especially the specimens mentioned in Prof. DIELS' "Die Flora von Central China."<sup>2)</sup> In Dahlem, as in Paris, I devoted myself to making notes of the specimens preserved there, as I had not brought my materials with me. I especially devoted myself to

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<sup>1)</sup> During my stay at Kew, I was away from my work for a little more than a week, when I went to Brussels to take part in the International Botanical Congress, then being held there, at which I presented a paper entitled "Botanical Survey of the Government of Formosa, with short Sketches on the Vegetation and Flora of the Island." This paper is now in press at Brussels.

<sup>2)</sup> DIELS,—Die Flora von Central China. ENGL. Bot. Jahrb. XXIX. pp. 169-657.



making sketches, on tracing paper, of the specimens preserved only in Dahlem and nowhere else, so that I could make a close comparison with these sketches on my return to Tōkyō. After finishing my work, I went with the same purpose to the Herbarium at St. Petersburg, in order to see the type specimens of MAXIMOWICZ. During my work on the continent, I was successful in placing some species which I had not been able to determine at Kew. Still, many of the plants in my collections, which remained undetermined, are not represented in any of the herbaria on the continent. It is, therefore, highly probable that they are species not yet described. Shortly after my return to Tōkyō, I finished preparing my "Materials for a Flora of Formosa", which had been undertaken during my stay at Kew. The paper<sup>1)</sup> is now in press in Tōkyō.

To mention the number of species in the flora<sup>2)</sup> of the island, known to us up to the present time, there are in the *Enumeratio*<sup>3)</sup> 1999 species belonging to 701 genera and 153 families. In my *Flora Montana*<sup>4)</sup> 392 species are mentioned, belonging to 266 genera and 70 families. In my "Materials for a Flora of Formosa", I have mentioned 735 species, belonging to 343 genera and 109 families, thus adding to our present knowledge of Formosan flora 567 species, 72 genera and 2 families. Excluding all those species which appear for a second or third time in the above three paper, the total number of the plants of the island is 2660 species, belonging to 836 genera and 156 families, thus adding 292 species to the number given in "List of Plants in Formosa," quite recently published by Mr. T. KAWAKAMI.<sup>5)</sup> At present, the number of species has nearly doubled since the publication of Dr. A. HENRY's preliminary work.<sup>6)</sup> Thanks to the encouragement and

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<sup>1)</sup> HAYATA, B.—Materials for a Flora of Formosa. Journ. Coll. Sci. Imper. Univ. Tōkyō, XXX. Art.-I. 471 pages. June, 1911.

<sup>2)</sup> The term flora used in this work includes flowering plants, ferns and their allies.

<sup>3)</sup> MATSUMURA, J. et HAYATA, B.—*Enumeratio Plantarum Formosanarum*. Journ. Coll. Sci. Imp. Univ. Tōkyō XXII. 702 pages, with 18 plates, 1906.

<sup>4)</sup> HAYATA, B.—*Flora Montana Formosæ*. Journ. Coll. Sci. Imper. Univ. Tōkyō, XXV. Art.—19, 260 pages, with 41 plates, 1908.

<sup>5)</sup> KAWAKAMI, T.—A List of Plants of Formosa, 119 pages, Taihoku, 1910.

<sup>6)</sup> HENRY, A.—A List of Plants from Formosa, in Transactions of the Asiatic Society of Japan, XXIV. Suppl. 1896.



assistance given to botanical research by the Government of Formosa, we now have a fair knowledge of the flora of this interesting island.

A few remarks about the publication of the present work, which is to be continued in a long series, may not be out of place. For a long time, I have had a desire to publish a flora of Formosa, accompanied by icones, to be issued yearly in separate numbers, with some fixed allowance for this special publication, which might be completed in fifteen years. In 1909, I asked Mr. K. OSHIMA, then the Civil Governor of Formosa, to consider the matter of publication. Owing to the gracious aid he extended to me, it has been possible to arrange that the publication shall be carried on for fifteen years, beginning this year. The icones will contain 600 plates, illustrating nearly all the plants to be found in Formosa, and accompanied by descriptions. This will be issued yearly for fifteen years in separate numbers, each containing 40 plates.

The present fasciculus contains all the plants belonging to Polypetalae known to us from the island up to the present time, accompanied by 40 plates mainly illustrating the species newly described by myself in my "Materials for a Flora of Formosa." The plan of the present work was at first to give full descriptions of all plants so as to serve as a guide to students of the Formosan flora. The time, however, being very limited, I have found it difficult to carry out this plan, and therefore am obliged to be content with giving only descriptions of plants of special interest. I hope to be able to add full accounts in the next fasciculus, and to pursue the plan through the whole series.

In conclusion, I wish to tender my hearty thanks to all the officials of the Government of Formosa who have helped me in the publication of my work. My very cordial thanks are due especially to Mr. T. KAWAKAMI, who has assisted me in many ways.

B. HAYATA.

April, 1911.



*Key to the Orders of the Formosan Flowering Plants.*

**I. Dicotyledons.**

1. Polypetalous.

Series I. **Thalamifloral.** Ranunculaceæ to Tiliaceæ.

„ II. **Discifloral.** Lineæ to Coriariæ.

„ III. **Calycifloral.** Leguminosæ to Cornaceæ.

2. Gamopetalous. Caprifoliaceæ to Plantagineæ.

3. Apetalous. Nyctagineæ to Ceratophylleæ.

**II. Gymnosperms.** Coniferæ to Cycadaceæ.

**III. Monocotyledons.**

1. Microspermous. Hydrocharideæ to Orchideæ.

2. Epigynous. Scitamineæ to Dioscoreaceæ.

3. Coronarius. Roxburghiaceæ to Commelinaceæ.

4. Calycinous. Flagellariæ to Palmæ.

5. Nudifloral. Pandaneæ to Lemnaceæ.

6. Apocarpous. Alismaceæ to Najadaceæ.

7. Glumaceous. Eriocaulæ to Gramineæ.

Class I. Dicotyledons—Polypetalous.

Series I. **Thalamifloral.** Flowers usually bisexual and regular; calyx inferior, of distinct or connate sepals; corolla of distinct petals, sometimes united at the very base, (for examples, Ternstroemiaceæ, Malvaceæ); stamens hypogynous, rarely inserted on a hypogynous disk or torus. Exceptions: Flowers unisexual in Menispermaceæ; irregular in *Viola*, *Impatiens*, *Polygala*, and some others; petals none in *Clematis* and some others.

Ovary apocarpous, of 2 or more free carpels, rarely carpel solitary.

Flowers bisexual.

Sepals 5 or fewer, petals 1-seriate.

Sepals deciduous.

Ranunculaceæ.

(*Ranunculus*).

Sepals and petals 2-3-seriate, or sepals 1-seriate and petals

2- or more-seriate.



- Shrubs or trees.
  - Leaves stipulate, sepals 5 or more. Magnoliaceæ.
  - Leaves exstipulate, sepals 3. Anonaceæ.
  - Aquatic herbs. Nymphæaceæ.
  - Flowers unisexual, dioecious. Menispermaceæ.
- Ovary syncarpous.
  - Ovary 1-celled, spuriously 2-celled in Cruciferae.
    - Placentas parietal.
      - Endosperm 0.
        - Ovary spuriously 2-celled. Cruciferae.
        - Ovary one-celled, usually on a gynophore.
          - Capparideæ.
      - Endosperm copious.
        - Flowers irregular.
          - Plant with milky juice. Papaveraceæ.
          - Plant without milky juice.
            - (Corydalis).
        - Stamens 5, anthers spurred.
          - Violaceæ.
        - Stamens 8, anthers not spurred.
          - Polygaleæ.
      - Flowers regular.
        - Plant with milky juice. Papaveraceæ.
        - Plant without milky juice.
          - Herbs with glandular hairs.
            - Droseraceæ.
          - Trees on shrubs.
            - Stamens many, in 1 or 5-bundles.
              - Hypericineæ.
            - Stamens, 5 or more, not in bundles.
              - Fruits capsular placentas 2.
                - Pittosporeæ.
              - Fruits berried, placentas 3 or more.



- Bixineæ.
- Placentas free, central or basal.
- Berberideæ.
- Sepals, petals and stamens 6 each.
- Sepals 5 or calyx 5-fid.
- Caryophylleæ.
- Herbs, leaves opposite.
- Trees or shrubs, leaves scale-like.
- Tamariscineæ.
- Ovary 2-many-celled.
- Sepals imbricate in bud.
- Ovary with many (more than 4) ovules in each cell.
- Geraniaceæ.
- Flowers irregular.
- (*Impatiens*).
- Flowers regular.
- Leaves opposite.
- Elatineæ.
- Stamens 3-10 free.
- Stamens many, in 1 or 5-bundles.
- Hypericineæ.
- Leaves alternate, trees or shrubs.
- Ternstroëmiaceæ.
- Leaves radical or whorled, herbs.
- Ficoideæ.
- (*Mollugo*).
- Ovary with a few (less than 4) ovules in each cell.
- Trees or shrubs.
- Leaves alternate, petals connate at the base.
- Ilicineæ.
- Leaves opposite, flowers usually unisexual. Calyx  
of distinct sepals.
- Guttiferæ.
- Herbs, leaves simple or compound.
- Geraniaceæ.
- Sepals valvate in bud.
- Malvaceæ.
- Anthers one-celled.
- Anthers two-celled.



Filaments free.

Tiliaceæ.

Filaments monadelphous.

Sterculiaceæ.

Series II.—**Discifloral.** Flowers usually bisexual and regular; calyx inferior, petals distinct or connate at the very base, with usually a perigynous or hypogynous disk or row of glands between their insertion and the ovary. Stamens inserted on or at the inner or outer base of the disk, or between the glands, or on the petals.

Flowers regular.

Fruits of separate carpels.

Leaves gland-dotted.

Rutaceæ.

Leaves not gland-dotted.

Leaves opposite.

Leaves pinnate

Zygophyllaceæ.

Leaves simple.

Coriariæ.

Leaves alternate, exstipulate, compound.

Stamens inserted chiefly outside the disk.

Simarubeæ.

Stamens inserted chiefly inside the disk.

Sapindaceæ.

Fruits syncarpous.

Herbs.

Terrestrial.

Leaves stipulate, stamens many.

Tiliaceæ.

Leaves stipulate.

Geraniaceæ.

Leaves exstipulate.

Lineæ (*Linum*).

Aquatic herbs, disk adnate to the ovary.

Whole plant floating.

Onagrariceæ (*Trapa*).

Leaves and flowers only floating.

Nymphæaceæ.

Trees or shrubs.

Stamens 5 or fewer, opposite or on the petals.

Leaves simple.



Petals valvate.

Undershrubs with tendrils.

Ampelideæ.

(*Vitis*).

Shrubs, no tendrils.

Olacineæ.

Petals minute, imbricate or involute.

Rhamneæ.

Leaves compound, no tendrils.

Ampelideæ (*Lecy*).

Stamens alternate or opposite and alternate with the petals, or many.

Leaves alternate, exstipulate.

Leaves gland-dotted. Rutaceæ.

Leaves not gland-dotted.

Ovary 1-celled, ovules many, on 3-5 parietal placentas. Bixineæ.

Ovary 1 or more celled, placentas basal or axile.

Leaves simple.

Petals valvate.

Olacineæ.

Petals imbricate.

Disk of glands. Styles 3-5.

Lineæ.

Ovary 2-5-celled. Styles 2-3-fid. Celastrineæ.

Ovary 1-celled. Style simple.

Anacardiaceæ.

Ovary 2-5-celled. Style simple.

Sapindaceæ.

Leaves compound.

Filaments confluent, forming a tube.



## Meliaceæ.

Filaments distinct.

Ovules pendulous.

Ovary 1-celled, 1-ovuled.

## Anacardiaceæ.

Ovary 2-3-celled, cells

1-2-ovuled.

## Burseraceæ.

Ovules erect.

Ovary, cells 1-2-ovuled.

## Sapindaceæ.

Leaves alternate, stipulate.

Stamens many.

## Tiliaceæ.

Stamens 3-5.

Ovary 3-5-celled. Lineæ.

Ovary 2-celled.

## Celastrineæ.

Leaves opposite, trees or shrubs.

Leaves gland-dotted, simple.

## Rutaceæ.

*(Acronychia).*

Leaves not gland-dotted.

Leaves stipulate, compound or sometimes

simple.

## Sapindaceæ.

*(Turpinia).*

Leaves exstipulate.

Leaves simple.

## Celastrineæ.

Leaves compound.

## Sapindaceæ.

Flowers irregular, trees or shrubs.

Leaves opposite, simple, exstipulate.

## Malpighiaceæ.



Leaves alternate, simple and compound.

Stamens 5-10.

Sapindaceæ.

Stamens (perfect) 2, opposite 2 of 5 petals.

Sabiaceæ

Serves III.—**Calycifloral.** Flowers regular, mostly bisexual; calyx inferior or superior; petals distinct, or connate at the very base only; disk 0 or very obscure; stamens inserted in the limb of the calyx.

(In the genera and orders with inferior ovaries, the limb of the calyx is often undeveloped, which character should refer them technically to the apetalous division. Most of them will be found also in that division.

Flowers bisexual or polygamous.

Ovary superior (or half-superior in *Trapa* and *Ficoideæ*).

Herbs.

Fruit a solitary follicle, leaves usually compound.

Leguminosæ.

Fruits of small achenes, leaves compound.

Rosaceæ.

Fruits drupaceous coriaceous.

Haloragææ.

(*Haloragis*).

Fruits capsular.

Sepals 2, embryo annular. Portulacaceæ.

Sepals 3-5.

Aquatic herbs.

Lythrarieæ.

Terrestrial herbs.

Leaves not carnosæ. Saxifrageæ.

Leaves carnosæ. Crassulaceæ

Fruits indehiscent, 2-or 3- horned nuts, aquatic.

Onagrarieæ. (*Trapa*).

Trees or shrubs.

Fruits of many small drupes, prickly shrubs,

Rosaceæ. (*Rubus*).

Fruits various.

Ovary 1-celled, (style single; leaves alternate



usually compound, stipulate, fruits follicular  
or indehiscent. Leguminosæ.

Ovary 2- or more-celled.

Styles single.

Anthers opening by slits.

Styles long, stigmas capitate,

Leaves exstipulate.

Lythrarieæ.

Stigmas simple, leaves stipulate.

Rhizophoreæ.

Anthers opening by pores.

Melastomaceæ.

Styles as many as the cells.

Petals 5.

Saxifrageæ.

(*Astilbe*, *Itea*)

Petals 0.

Hamamelideæ.

Ovary one-celled, styles 4 or more.

Sepals 5, placentas parietal.

Samydaceæ.

(*Homalium*).

Sepals 2, placentas basal. Portulacaceæ.

Ovary inferior.

Stamens inserted on the calyx-limb.

Anthers opening by pores.

Melastomaceæ.

Anthers opening by slits.

Petals very small, scale-like.

Saxifragaceæ.

(*Astilbe*).

Petals imbricate, distinct, large, not scaly.

Leaves stipulate.

Ovary 1-celled.

Rosaceæ (*Photinia*).



Ovary 2-4-celled.

Rhizophorææ.

Leaves exstipulate, ovary 1-celled.

Combretaceæ.

Stamens epigynous.

Petals valvate, (scaly in Hamamelideæ).

Leaves compound; ovary 4-10-celled (leaves  
simple in *Fatsea*, *Helwingia*, *Oreopanax*,  
*Hedera*).

Araliaceæ.

Leaves simple.

Ovary 1-celled, shrubs.

Cornaceæ.

Ovary 2-5-celled.

Herbs. Umbelliferæ.

(*Hydrocotyle*).

Shrubs.

Endocarps not horny.

Saxifrageæ.

Endocarps horny.

Hamamelideæ.

Petals imbricate.

Flowers umbelled, styles 2.

Umbelliferæ.

Flowers not umbelled.

Leaves stipulate. Rhizophorææ.

Leaves exstipulate.

Beset with stellate hairs.

Saxifrageæ.

(*Deutzia*).

Without stellate hairs.

Myrtaceæ.

Flowers unisexual.

Scandent herbs or shrubs with tendrils;



flowers monoëcious, fruits baccate.

Cucurbitaceæ.

Erect herbs, shrubs or arbours.

Shrubs or arbours.

Flowers in racemes.

Passifloræ (*Carica*).

Flowers in heads.

Hamamelidæ.

(*Liquidambar*).

Herbs.

Terrestrial herbs.

Begoniaceæ.

Aquatic herbs.

Stamens more than 2.

Haloragææ.

(*Myriophyllum*).

Stamen 1.

Haloragææ.

(*Callitriche*).

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- (6) Flowers comparatively small  $1\frac{1}{2}$  cm. in diameter.. { *Clematis uncinata*. 5  
var. *floribunda*.  
Flowers comparatively large, 2—5 cm. in diameter. (7)
- (7) Flowers 2—3 cm. in diameter. .... *Clematis Meyeniana*. 6  
Flowers 4—5 cm. in diameter. (8)
- (8) Sepals lanceolately elongate. (9)  
Sepals oblongo-ovate ..... *Clematis akensis*. 7
- (9) Leaves acute vel acuminate at the apex..... *Clematis longisepala*. 8  
Leaves obtuse or shortly acute..... *C. tozanensis*. 9
- (10) Leaflets entire. (11)  
Leaflets grossly dentate or lobulate ..... *C. taiwaniana*. 10
- (11) Leaflets globoso-deltoid. .... { *a.* rounded at the apex *C. Owatarii*. 11  
*b.* mucronate at the apex *C. paniculata*. 12  
Leaflets oblongo-ovate or oblong. (12)
- (12) Flowers large 4 cm. in diameter ..... *C. boninensis*. 13  
Flowers small 2 cm. in diameter. (13)
- (13) Stamens dark coloured when dried ..... *C. formosana*. 14  
Stamens not dark coloured..... *C. chinensis*. 15

**1. *Clematis crassifolia*** BENTH. Fl. Hongk. p. 7; KUNTZE Monog. Clemat. p. 152; FORBES et HEMSL. Ind. Fl. Sin. I. p. 3; FINET et GAGNEPAIN Contrib. Fl. Asi. Orient. p. 16; HAYATA Materials for a Flora of Formosa, in Journ. Coll. Sci. Imp. Univ. Tōkyō XXX.—I, p. 13.

HAB. Shintiku, Goshōrin, leg. T. KAWAKAMI, Dec. 1905, (No. 1245).

DISTRIB. Central and southern China.

OBSERV. Rather stout, glabrous climbing plant; leaves fleshy, trifoliate, leaflets elliptical, obtuse or acute, narrowed at the base, nerves very obscure, reddish brown when dried; sepals angustate with white hairs on the margin, 18 mm. long; stamens 1 cm. long, with brownish undulated filaments; anthers oblong, not mucronate, five times shorter than the filaments; achenes long hairy, with hairy tails; remarkable for its undulate filaments.

**2. *Clematis Leschenaultiana*** DC. "Syst. I. p. 451; KUNTZE Monog. p. 167, (*C. acuminata* ♂); FINET et GAGNEPAIN Contrib. Fl. Asi. Orient. p. 27; HAYATA Materials for a Flora of Formosa p. 43.



*Clematis Wightiana* ? HAYATA Fl. Mont. Formos. p. 43.

HAB. Kachinro, Taitō, Iriyokukaku, Niki et Suichōrin.

DISTRIB. China and Indo-China.

OBSERV. Covered by yellowish soft hairs; leaves trifoliate, petioles 5 cm. long, leaflets ovate acute 8 cm. long,  $3\frac{1}{2}$  cm. broad, obscurely dentate or nearly entire, lateral leaflets oblique at the base; panicles few-flowered, peduncles 4-5 cm. long; sepals 4, ovate, nearly acute, with yellowish soft hairs on the outside, glabrous inside; stamens many, 12 mm. long. filaments hairy on the margin and outside, quite glabrous on the inside, anthers narrow, glabrous; achenes hairy, fusiform with two distinct ridges, tails with long hairs.

In my Flora Montana Formosæ I doubtfully referred this plant to *C. Wightiana*. After examining more carefully, I have found that the specimen is the same as the Philippine form of *C. Leschenaultiana* DC. The present plant differs from *C. Wightiana* in having fusiformed achenes and thread-like filaments. *C. Leschenaultiana* described in KUNTZE'S "Monog. Clemat. p. 167," has lanceolate leaves, while the Formosan plant has ovate ones.

**2.\* *Clematis Leschenaultiana* DC. var. *angustifolia* HAYATA** Materials for a Flora of Formosa p. 16. Stem striate, blackish purple, tomentose, or pubescent. Leaves trifoliate, scarcely tomentose, terminal leaflet oblongo-lanceolate, acuminate at the apex, acute or rounded at the base, 7-8 cm. long,  $2\frac{1}{2}$  cm. broad, remotely serrate, but entire towards the apex, petiolules 1 cm. long, lateral leaflets oblong-ovate, acute obliquely rounded at the base, common petioles 6 cm. long. Flowers often solitary or paniculate, panicles 2-3-flowered, peduncles yellowish tomentose. Achenes fusiformed rostrate, tails long bearded, beards transversely spreading somewhat yellowish.

**3. *Clematis lasiandra* MAXIM. var. *Nagasawai* HAYATA** Fl. Mont. Formos. p. 40. Stem scandent, glabrous, sulcate. Leaves pinnate, 3-5-foliate 10-15 cm. long (including petioles) 5-9 cm. broad, folioles long petiolulate, simple or sometimes tri-lobate, ovate or ovately lanceolate, acuminate, unequally sharply serrate. Panicles axillary, few-flowered, or nearly termi-



nal, shorter or longer than the leaves, bracteate at the base, bracts trilobed or not lobed, linear, smaller, pedicels slender, 2-3-times longer than the flowers. Flowers nodding, 2 cm. in diameter and so long. Sepals 4, connivent, revolute at the apex, oblong or ovate-oblong, obtuse, or emarginate, 23 mm. long, 8 mm. broad, subglabrous on both sides, slightly purple, margin velutinously tomentose. Stamens 4-seriate, the outermost the longest, filaments flattened linear, 17 mm. long, long and densely sericeo-pilose on the back, anthers 2 mm. long, not appendiculate on the apex, the innermost the shortest, filaments 9 mm. long, anthers longer 3 mm. long. Pistils 8 mm. long sericeo-plumoso-caudate. Receptacles (fruiting) erect, globose, 4 mm. in diameter, pilose; carpels (when matured) numerous ovately-lanceolate, acuminate, compressed, 3 mm. long, marginate, rubescent, pilose, long plumously caudate, tails  $3\frac{1}{2}$  cm. long.

HAB. Shūkoran.

DISTRIB. Type: Kiūshiū. Southern parts of Japan.

The present variety differs from the type in having many-flowered peduncles; this never has uni-flowered peduncles as the type.

**4. Clematis Morii** HAYATA (Pl. I.) Flora Montana Formosæ p. 42.

Stem ligneous, scandent, glabrous, striate. Leaves opposite or quaternate, trifoliate, nearly 15 cm. long (including petioles, petioles voluble), subcoriaceous, glaucescent beneath, exstipulate, terminal foliole petiolulate, long caudately acuminate obscurely lobate, rounded at the base, margin subentire or remotely mucronately serrulate, veins beneath prominent, but impressed above, veinlets somewhat prominent, 5-nerved, 11 cm. long  $3\frac{1}{2}$  cm. broad, petiolules 1 cm. long, lateral leaflets much shorter often elobate caudately ovate remotely mucronately-serrulate, petiolulate, petiolules 3 mm. long or subsessile. Flowers larger, nodding, half-closed,  $1\frac{1}{2}$  cm. in diameter, and in length, axillary solitary pedicellate, 2-bracteate at the base of pedicels, bracts minute pubescent, pedicels 3 cm. long, pubescent. Sepals 4, broader, 1.8 cm. long, 9 mm. broad, ovate mucronately acute, dark-purple inside, velutinously pilose outside, base slightly cordate, veinlets parallel, half-closed, never opened. Stamens 3-4-seriate, the outermost the longest, filaments



inear, flattened, long barbate, 13 mm. long, anthers nearly 2 mm. long, emarginate at the apex, the innermost the shortest, filaments 7 mm. long, anthers 3 mm. long. Carpels nearly 1 cm. long, long plumosely caudate.

HAB. The Central Mountain Ranges.

Comes near to *Clematis larbellata* EDGEW., and still more to *Clematis lasiandra* MAXIM.; but differs from them in having silky pubescent sepals and subentire leaflets.

**5. *Clematis uncinata*** CHAMP. in 'Kew Journ. Bot. III. p. 255'. BENTH. Fl. Hongk. p. 6; MAXIM. Mém. Biol. IX. p. 597; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 7; FINET et GAGNEPAIN Contrib. Fl. Asi. Orient. p. 8 *Cl. leiocarpa* OLIV. in HOOK. Ic. Pl. t. 1533; **var. *floribunda*** HAYATA Materials for a Flora of Formosa p. 18. Glabrous, somewhat black in a dried specimen, leaves 12 cm. distant. Leaves 5-foliolate, subcoriaceous nearly 20 cm. long, leaflets ovately lanceolate acuminate, rounded at the base, 11 cm. long, 3½ cm. broad, 3-nerved, nerves prominent on both sides. Panicles axillary, 30 cm. long 15 cm. broad, very much branched, bracts subulate. Flowers smaller 1½ cm. in diameter, sepals 4, lanceolate, aristate, 1 cm. long 2½ mm. broad, margin albo-lamellate, glabrous on both sides, stamens 2-3-seriate, the innermost the largest, 6 mm. long, filaments nigrificant, anthers narrowed, connectives broadly produced; achenes subglabrous, ovate, style long barbate, beards reddish.

HAB. Taiko, Coll. T. KAWAKAMI, Aug. 1908, (No. 58).

The present variety differs from the type in having much smaller flowers, ovate-lanceolate leaves, and not leafy inflorescence. It resembles the type in stamens, achenes, and especially in glabrous sepals turning black when dried. The type has usually larger flowers with sepals twice as long as those of the variety, longer, looser and less flowered inflorescence, with longer peduncles. The variety is represented at Kew by a specimen from Hongkong, which is labelled *C. uncinata*; but is different from the type of the species mentioned.

**6. *Clematis Meyeniana*** WALP.; BENTH. Fl. Hongk. p. 6; MAXIM. in Mém. Biol. X. p. 597; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 5; HENRY,



List Pl. Formos. p. 14; ITÔ et MATSUM. Tent. Fl. Lutch. I. in Jour. Sci. Coll. Imp. Univ. Tôkyô XII. p. 271; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 332; MATSUM. et HAYATA Enum. Pl. Formos. p. 5.

HAB. Suihenkiaku, Shinkô, Kelung, Tamsui.

DISTRIB. Amoy, Hongkong, and Central China.

**7. Clematis akœnsis** HAYATA (Pl. II) Materials for a Flora of Formosa p. 13. Stem glabrous. Leaves 15 cm. distant, 3-foliolate, somewhat fleshy, petiolate, petioles 5 cm. long, leaflets cordately ovate, 3 cm. long, often folded along the midrib, acute and reflexed at the apex, glabrous, petiolulate, petiolules 1.5 cm. long. Flowers axillary, solitary, or paniculate, panicles few flowered, long pedunculate; peduncles 7 cm. long, incrassate at the apex, 2-bracteate at the base, sometimes not bracteate, bracts minute spatulate obtuse 1 cm. long. Flowers when opened 4.5 cm. in diameter. Sepals 6, velvety outside, duplicately reflexed on the margin, glabrous inside, somewhat fleshy, oblong, 23 mm. long, 8 mm. broad, obtuse at the apex; stamens numerous as half long as sepals, anthers with a obtusely produced connectives. Achenes barbate, beards white.

HAB. Akô; Miharashi-tôge, coll T. KAWAKAMI et U. MORI, April, 1907. (Fl.)

The present plant is very like, or perhaps the same as, HENRY's specimen, No. 1320, labelled *C. parviloba*, at Kew. The type of *C. parviloba* is quite different from our plant and also from HENRY's specimen, in having hirsute sepals, much thinner and less glabrous leaves

**8. Clematis longisepala** HAYATA Fl. Mont. Formos. p. 41, and Materials for a Flora of Formosa p. 17. Stem ligneous, scandent, glabrous striate. Leaves pinnately 5-foliolate, long petiolate, very glabrous, 15-20 cm. long including petioles, petioles voluble striate, leaflets petiolulate, petiolules 1.5-2 cm. long, leaflets opposite ovately oblong acute at the apex, rounded at the base, entire 3-5-nerved, submembranaceous, pale beneath, 5 cm. long, 2½ cm. broad, stipules connate, forming a peltate shields on the nodes of the stems. Panicles axillary, a little longer than the leaves, 5-8-flowered. Flowers quite large, patent, 6-7 cm. in diameter, 1-bracteate at the base of the



pedicels, bracts pinnately 3-parted, 3-4 cm. long, long stipitate, segments oblongo-lanceolate, pedicels 7-10 cm. long. Sepals 4, linear, lanceolate, 3 cm. long, or longer, obtuse at the apex carinately mucronate, subglabrous atro-purpurascens inside, eburneous and velutinous outside, multi-nerved. Stamens many-seriate (nearly 5-seriate), the outer the longer 2 cm. long, filaments linear, slightly thickened upwards, constricted at the apex, slender dilated at the base, glabrous; anthers linear, 2 mm. long, apiculate, the inner stamens the shorter, 7 mm. long. Carpels long sericeo-plumoso-caudate, nearly 1 cm. long.

HAB. Mt. Morrison.

Comes very closely to *Clematis crassifolia* BENTH. Fl. Hongk. p. 7; but differs from that in having round based leaves.

**9. *Clematis tozanensis* HAYATA (Pl. III.) Fl. Mont. Formos. p. 42.**

Stem ligneous, scandent, glabrous striate. Leaves larger, pinnately 5-3-foliolate, long petiolate, quite glabrous, nearly (including petioles) 20 cm. long as broad, petioles striate voluble, leaflets oblongo-ovate or cordately ovate, base cordate or truncate, 8 cm. long, 6 cm. broad, palmately 9-7-nerved, apex obtuse quite entire slightly repand, submembranaceous, or somewhat thick, petioles 2-3 cm. long, very voluble, stipules broad connate, forming a peltate shields at the nodes of the stems. Panicles axillary, few-flowered, nearly as long as the leaves. Flowers large, patent, 6 cm. in diameter, 1-bracteate at the base of the pedicels, bracts large foliaceous, simple stalked, elliptical, acute at the base. Sepals 4, narrowed,  $3\frac{1}{2}$  cm. long 8 mm. broad, acute or obtuse, inside glabrous dark-purple, outside eburneous velutinosely pubescent, patent. Stamens many-seriate, the outermost the longest, filaments 2 cm. long, dilate, linear, slender, anthers linear 2 mm. long apiculate, the innermost the shortest, filaments 2 mm. long, anthers 3 mm. long apiculate. Carpels long sericeo-plumoso-caudate, nearly 9 mm. long.

HAB. Tozan, in Mts. Morrison.

Comes closely to *Clematis smilacifolia* WALL., but differs from it in the shape of the bracts and stipules. In this *Clematis*, the filaments of



the stamens of the outermost series are the longest, while the anthers of the same series are the shortest.

**10. *Clematis taiwaniana* HAYATA** (Pl. IV.) Materials for a Flora of Formosa p. 17. Pubescent, stem striate. Leaves triparted or bi-trifoliolate, triangular in outline, 20 cm. long as broad, petioles 12 cm. long, leaflets ovately cordate, cuspidate, grossly dentate, pubescent on both sides. Panicles axillary, 15 cm. long 7 cm. broad, pubescent or tomentose. Flowers small nearly 1 cm. in diameter, 8 mm. long; sepals 4, ovate, or spathulate obtuse, pubescent outside, glabrous inside; stamens 2-3-seriate, filaments dilated, anthers oblong; achenes pubescent, styles long barbate, beards whitish.

HAB. Taichūchō: Daibōho, Bioritsu: Taiko. Taihoku: Shizangan.

One of the commonest species of *Clematis* in Formosa; the leaves of the plant are extremely variable. It comes near *C. triloba* Hook.; but differs from it in having leaves grossly dentate or incised lobes. Also it is very like *C. Vitalba* LINN. var. *javanica* O. Kze., from which it is distinguishable by its more rounded fruits.

**11. *Clematis Owatarii* HAYATA** Materials for a Flora of Formosa p. 17. Stem slender, striate, glabrous. Leaves 14 cm. distant, pinnate, leaflets 3-5, rotundately ovate, or triangularly ovate, rounded or emarginate at the apex, truncately rounded at the base, but abruptly acute at the extremity of the base, 4 cm. long,  $3\frac{1}{2}$  cm. broad, glabrous, entire, petioles 6 cm. long, petiolules  $1\frac{1}{2}$  cm. long. Flowers axillary solitary, long pedunculate, peduncles 7 cm. long, incrassate at the apex, 2-4-bracteate at the base, bracts minute, spathulate or ovate. Achenes complanate, barbate, tails 5 cm. long, barbate, beards transversely patent, 4 mm. long, white.

HAB. Formosa.

The present plant differs from *C. recta* and also from *C. paniculata* in having longer tailed fruits and much more rounded leaves. The leaves have generally three or sometimes five leaflets, then the distance from the first pair to the second pair is nearly as long as the petioles.

**12. *Clematis paniculata* THUNB.; HAYATA** Materials for a Flora of Formosa p. 18.



HAB. Garanbi, Kōshūn, by T. KAWAKAMI, July, 1906, No. (1620).

DISTRIB. Japan, China and Corea.

Exactly the same with Chinese specimens so named at Kew, but a little different from the Japanese specimens preserved in the Tōkyō Herbarium.

**13. *Clematis loninensis* HAYATA** Materials for a Flora of Formosa p.

14.

HAB. Poan islands.

**14. *Clematis formosana* KUNTZE**; "HOOK. Ic. Pl. t. 1945"; HENRY List Pl. Formos. p. 14; MATSUM. et HAYATA Enum. Pl. Formos. p. 5.

HAB. Kachinro, Taichū: Koroton, Ape's Hill.

DISTRIB. An endemic plant.

**15. *Clematis chinensis* RETZ.**; DC. Prodr. I. p. 3; FORBES in Journ. Pot. (1884) pp. 262 et 265; FORBES et HEMSL. Ind. Fl. Sin. I. p. 3; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 332; MATSUM. et HAYATA Enum. Plantarum Formosanarum p. 4; FINET et GAGNEPAIN Contrib. Fl. Asi. Orient. p. 20; HAYATA Materials for a Fl. Formos. p. 14.

*Clematis minor* DC.; LOUR. Fl. Cochinch. ed-WILLD. p. 422; FORBES in Journ. Pot. (1884) p. 263.

*Clematis Benthiana* HEMSL. Ind. Fl. Sin. I. p. 2.

HAB. Taitō: Taiharō, by T. KAWAKAMI and G. NAKAHARA, Jan. 1906, (No. 680).

DISTRIB. Southern and central China.

OBSERV. Plant slender, pubescent; internodes 8 cm. long; leaves trifoliolate, about 10 cm. long, petioles 4 cm. long, twining, petiolules almost equal 8 mm. long, leaflets cuspidate-lanceolate, the terminal one 6 cm. long 1 cm. wide, much larger than the lateral ones, margin entire, with three distinct and two obscure nerves, veins impressed on the surface, prominent beneath, scarcely hairy, turned black when dried; achenes flattened in a dry specimen, with two ridges, ovate, 2 mm. broad, hairy, tails 2 cm. long with soft hairs; somewhat resembles *C. formosana* O. KUNTZE.



*Species imperfectly known to me.*

*Clematis apiifolia* DC; MATSUM. et HAYATA Enum. Pl. Formos. p. 4.

HAB. between Maso and Keiteishō, Bankinsing.

*Clematis Benthamiana* HEMSL.; MATSUM. et HAYATA Enum. Pl. Formos.

p. 5. = *C. chinensis* RETZ.

HAB. Biōritsu.

*Clematis grata* WALL.; MATSUM. et HAYATA Enum. Pl. Formos. p. 5.

HAB. Pachina, Suihenkiaku, Tamsui, South Cape.

*Clematis Henryi* OLIV.; MATSUM. et HAYATA Enum. Pl. Formos. p. 6.

HAB. Biōritsu.

*Clematis parviloba* GARD. et CHAMP.; MATSUM. et HAYATA Enum. Pl. Formos. p. 6.

HAB. South Cape.

*Clematis recta* LINN.; MATSUM. et HAYATA Enum. Pl. Formos. p. 6.

HAB. Biōritsu, South Cape.

## 2. *Thalictrum* LINN.

***Thalictrum Urbaini*** (HAYATA) Perennial herb. Stem 13–17 cm. high, glabrous, 2–3 clustered. Leaves bipinnate; radical ones 4–5 cm. long, biternately pinnate, long petiolate, petioles 3–4 cm. long, leaflets opposite tripinnate moderately petiolate, terminal one equally long, petiolules 1.5 cm. long, pinnules opposite, petiolulate 6 mm. long 5 mm. broad, subcordate trilobate obtuse glabrous on both sides. Cauline leaves 2–3, smaller, alternate, ternately or biternately pinnate. Panicles 4–5-flowered, flowers small, filaments somewhat long, broadened towards the apex, truncate at the apex or abruptly and very shortly rostrate; anthers oblong; stigma lateral; style recurved; carpels nervose, more or less stipitate.

*Thalictrum Fauriei* HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 7; HAYATA Fl. Mont. Formos. p. 44. HAB. Morrison, Taiton, Tikushiko.



3. *Anemone* LINN.

***Anemone vitifolia*** HAM.; HAYATA Fl. Mont. Formos. p. 39, (in note).

*Anemone luzoniensis* ROLFE; HAYATA in Tōkyō Bot. Mag. XX. p. 73;  
and Fl. Mont. Formos. p. 39.

HAB. Shintiku: Goshōrin.

DISTRIB. The Himalayas and the Philippine islands.

The present plant was first mentioned as *Anemone luzoniensis* ROLFE in my paper above cited. A little later, I was informed by Mr. E. D. MERRILL of the Bureau of Science, Manila, that when he was in the Kew Herbarium, he and Mr. ROLFE compared the Philippine material with the Himalayan specimen, and came to the conclusion that the Luzon plant is not distinctive from *Anemone vitifolia* HAM. The description of *Anemone luzoniensis* ROLFE has never been published. I think that the Formosan plant above mentioned is exactly the same as the Luzon plant, and Mr. MERRILL has the same opinion. After considering all the above cases, I am much inclined to think that my plant should be referred to *Anemone vitifolia* HAM.

4. *Ranunculus* LINN.*Dichotomous Key to the Formosan Species.*

Plants usually small, less than 15 cm. high. (1)

Plants usually larger, 30-40 cm. high. .... (3)

(1) Leaves densely hirsute ..... *R. taisanensis*. 1

Leaves nearly glabrous or slightly hirsute. (2)

(2) Leaves broadly orbicular, slightly lobulate ..... *R. Kawakamii*. 2

Leaves ternately lobed, lobes linear ..... *R. ternatus*. 3

(3) Syncarps globose ..... *R. acris*. 4

Syncarps elongately globose ..... *R. japonicus*. 5

1. ***Ranunculus taisanensis*** HAYATA (Pl. V.) Materials for a Flora of Formosa p. 20. Perennial, stem ascendent, hirsute, few-branched, 14 cm. long. Radical leaves long petiolate, hirsute, petioles 4 cm. long, dilated at



the base, embracing the stem, blades broadly rounded, 3-lobate, lobes roundly rhomboid slightly lobulate, or irregularly serrate, truncately cordate at the base, nearly rounded at the apex. Cauline leaves like radical ones, petioles dilated at the base, embracing the stem, upper ones trilobed, lobes acute. Panicles few-flowered or nearly reduced to one flower, bracts minute lanceolate 2 mm. long, peduncles  $1\frac{1}{2}$  cm. long. Flowers, when opened, 7-8 mm. in diameter. Sepals 5, elongately oblong, obtuse or rounded at the apex,  $3\frac{1}{2}$  mm. long 1 mm. broad, hirsute on the back. Petals 5-10, obovate, cuneate rounded at the apex, cuneate at the base, 4 mm. long 2 mm. broad, distinctly glanduliferous at the base. Stamens nearly 20, 2 mm. long, anthers rounded emarginate at the apex, filaments more or less complanate, carpophore oblongo-cylindrical. Carpels numerous. Achenes obliquely rounded,  $1\frac{1}{3}$  mm. long, rostrate, minutely punctate at the face, beaks very short.

HAB. Biōritsu : Rokugio.

Near *R. philippinensis* MERR. et ROLFE, but differs from it by the much smaller flowers and more round leaves.

**2. *Ranunculus Kawakamii* HAYATA** (Pl. VI.) Materials for a Flora of Formosa p. 19. Perennial herb. Stem slender, 7 cm. long hirsute, few-branched. Radical leaves clustered, longe petiolate, petioles 4-5 cm. long, hirsute, or subglabrous, dilated at the base, turning to a stipule-like scale, blades semiorbicular or rhomboid, rounded or obtuse at the apex, shortly 5-lobed, (lobes obtuse), entire downwards, acute or truncate at the base or sometimes reniformed or cordate, hirsute near the margin, 10 mm. long, 12 mm. broad. Cauline leaves smaller, hirsute, petioles dilated at the base, embracing the stem. Flowers solitary on the apex of the branches, or axillary, peduncles 1 cm. long, hirsute; flowers when opened 5 mm. in diameter. Sepals 4-5, rounded, very concave, bi-fid or rounded at the apex, 2 mm. long, pilose outside. Petals 3-5, white, oblong, rounded at the apex, 4 mm. long. Stamens nearly 10,  $1\frac{1}{2}$  mm. long, anthers oblong, rounded at the apex, filaments complanate, more or less shortly hirtellous at the base. Carpels nearly 10. Syncarps globose.



HAB. Kagi: Arizan.

The present plant appears very near to *R. Cymbalaria* PARSH and also to *R. flaccidus*; but differs from the former in the shape of the flowers and especially in having very few carpels, and from the latter in the hairy form of the plant.

**3. *Ranunculus ternatus*** THUNB. Fl. Jap. p. 241; FORBES et HEMSL. Ind. Fl. Sin. I. p. 16; HENRY List Pl. Formos. p. 14; DIELS Fl. Centr. Chin. in Engl. Bot. Jahrb. XXIX. p. 334; MATSUM. et HAYATA Enum. Pl. Formos. p. 9.

*Ranunculus extorris* HANCE, in "Ann. Sc. Nat. 5 me série V. p. 204."

*Ranunculus Zuccarinii* MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 5; MIQ. Prol. Fl. Jap. p. 193; FRANCH. et SAV. Enum. Pl. Jap. I. p. 8, et II. p. 267; S. MOORE in Journ. Bot. (1878) p. 129.

HAB. Tamsui.

DISTRIB. Japan, central China, Shanghai, Ningpo.

**4. *Ranunculus acris*** LINN. Sp. Pl. ed-2, p. 779; WILLD. Sp. Pl. II. p. 1326; English Botany t. 652; LEDEB. "Fl. Alt. II. p. 331," et Fl. Ross. I. p. 40; DC. Prodr. I. p. 39; MIQ. Prol. Fl. Jap. p. 193; FRANCH. et SAV. Enum. Pl. Jap. II. p. 266; FRANCHET Pl. David. p. 19; FORBES et HEMSL. Ind. Fl. Sin. I. p. 13; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 334; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tôkyô, XII. p. 274; PALIBIN Conspect. Fl. Koreæ p. 16; MATSUM. et HAYATA Enum. Pl. Formos. p. 7.

*Ranunculus japonicus* THUNB. in Trans. Linn. Soc. II. (1794) p. 337.

*Ranunculus propinquus* C. A. MEY in LEDEB. "Fl. Alt. II. p. 332," et Fl. Ross. I. p. 40; MAXIM. Prim. Fl. Amur. p. 20.

*Ranunculus propinquus* var. *hirsutus* A. GRAY Bot. Jap. in Mem. Am. Acad. VI. (1859) p. 378.

HAB. Kelung.

DISTRIB. Europe, Siberia, China, Japan and North Africa.

**5. *Ranunculus japonicus*** LANGSD. ex FISCH. in DC. Prodr. I. p. 38; FORBES et HEMSL. Ind. Fl. Sin. I. p. 14; MATSUM. et HAYATA Enum. Pl. Formos. p. 8.



*Ranunculus ternatus* DC. Prodr. I. p. 31; MIQ. Prol. Fl. Jap. p. 192; FRANCH. et SAV. Enum. Pl. Jap. I. p. 7; FRANCHET Pl. David. I. p. 19, (non THUNB.).

*Ranunculus pennsylvanicus* L. var. *japonicus* MAXIM. "Pl. Chin. Potanin. in Act. Hort. Petrop. XI. (1889) p. 24"; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII. p. 276.

HAB. Taihoku, Pachina.

DISTRIB. Japan.

*Species imperfectly known to me.*

*Ranunculus scleratus* LINN.; MATSUM. et HAYATA Enum. Pl. Formos. p. 8.

*Ranunculus* sp. HAYATA Materials for a Flora of Formos. p. 21.

HAB. Mt. Morrison.

OBSERV. Apparently perennial with long fibrous roots. Stem slender, hirsute, branchless, with a solitary flower. Radical leaves long petiolate, petioles 6 cm. long, slender, nearly glabrous or thinly hairy, blades rounded in outline, 3-5-lobed towards the apex, somewhat thick, nearly glabrous or hirsute. Cauline leaves 1 at the middle portion of the stem, subsessile, deeply 3-lobed, lobes lanceolate, obtuse or acute, hirsute. No flowers, indeterminate. There is something like this at Kew, labelled *Ranunculus philippinensis* MERR et ROLFE. Without examining the flowers, it is difficult to say whether our plant is identical with the Philippine plant or not.

*Isopyrum* LINN.

*Isopyrum adiantifolium* HOOK. et THOMS. var. *arisanense* HAYATA (Pl. VII.) Materials for a Flora of Formosa p. 21. Rhizome repent, stems erect, slender, 1 mm. in diameter, striate, subglabrous, leafless and branchless at the lower portions of the stem, but furcate or bi-furcate and few-leaved at the upper portions. Radical leaves clustered, 4-5 cm. long including petioles, petioles 3-4 cm. long, slender, stipulate at the base, stipules semi-orbicular 4 mm. long, adnate to the petioles, scaly, blades bi- or tri-pinnate, the terminal pinna simple, 12 mm. long (including petiolules), flabellately semi-orbicular, slightly lobulate, truncately acute at the base, entire, 7 mm. long,



8 mm. broad, lateral pinnae often pinnate 12 mm. long (including petiolules), lateral pinnules pinnate, terminal pinnule simple. Cauline leaves 2, at the base of branches, opposite, smaller, ternate or bi-ternately pinnate. Flowers dichotomously cymose, pedicels 8 mm. long. Sepals 5, ovately oblong, 4 mm. long, obtuse at the apex. Petals 5, very short, nectariformed, stipitate, 1 mm. long (including stalks), blades rounded  $\frac{1}{3}$  mm. long, obtuse and mucronate, with glandules at the base inside. Stamens 5, filaments  $2\frac{1}{2}$  mm. long, complanate, anthers oblongly orbicular often incurved. Carpels 2, separated, sessile, crescent-shaped, 3 mm. long,  $\frac{1}{2}$  mm. broad, style very short,  $\frac{1}{3}$  mm. long, stigma truncate. Follicles divaricate, elongate, 9 mm. long,  $2\frac{1}{2}$  mm. broad, connate at the base, truncate at the apex, greenish on the back, yellowish on the face. Seeds nearly 10, globose,  $\frac{3}{4}$  mm. in diameter, slightly carinate on the back, yellowish brown, glabrous.

HAB. Arizan.

Near *I. adiantifolium* HOOK. et THOMS., but differs from the type in having much smaller flowers and shorter leaves.

## Magnoliaceæ.

### *Conspectus of the Formosan Genera.*

- |     |  |                       |   |
|-----|--|-----------------------|---|
| (1) | Erect shrubs or trees.   | (2)                   |   |
|     | Climbing shrubs. Leaves exstipulate .....  | <i>Kadsura.</i>       | 5 |
| (2) | Perianth none .....  | <i>Trochodendron.</i> | 1 |
|     | Perianth exists. (3)   |                       |   |
| (3) | Stipules 0. Perianth double. Carpels in one whorl .....                            | <i>Illicium.</i>      | 2 |
|     | Stipules conspicuous, convolute and sheathing the young foliage,<br>deciduous. (4) |                       |   |
| (4) | Gynophore sessile .....  | <i>Magnolia.</i>      | 3 |
|     | Gynophore stalked .....  | <i>Michelia.</i>      | 4 |

### 1. *Trochodendron* SIEB. et ZUCC.

***Trochodendron aralioides*** SIEB. et ZUCC. Fl. Jap. I. p. 83, tt. 39 et 40; MIQ. Prol. Fl. Jap. p. 146; FRANCH. et SAVAT. Enum. Pl. Jap. p. 19;



HENRY List Pl. Formos. p. 14; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 11; HAYATA Fl. Mont. Formos. p. 44.

HAB. Morrison, Tikushiko, Taiton, Tamsui.

DISTRIB. Japan and the Loo-choo islands.

The plant spreads over from the main-island of Japan through Kiushiu to the Loo-choo islands as south as Formosa. It grows the most luxuriantly in this region of the island, forming a pure forest on the boundary between the Conifer and broad leaved tree regions. The trunk is here so large as to attain a diameter of even 15 ft.

## 2. *Illicium* LINN.

***Illicium anisatum*** LINN. Sp. Pl. ed-2, p. 664; DC. Prodr. I. p. 77; FRANCH. et SAV. Enum. Pl. Jap. I. p. 15; HENRY List Pl. Formos. p. 14; MATSUM. et HAYATA Enum. Pl. Formos. p. 9.

*Illicium religiosum* SIEB. et ZUCC. Fl. Jap. I. p. 5, t. 1; Bot. Mag. t. 3965; FORBES et HEMSL. Ind. Fl. Sin. I. p. 23.

*Illicium anisatum* LOUR. Fl. Cochinch. ed-WILLD. p. 432.

HAB. Various localities; Manapan.

DISTRIB. Japan.

***Illicium*** sp. HAYATA Fl. Mont. Formos. p. 45; and Materials for a Flora of Formosa p. 22.

HAB. The Central Mountain Ranges.

Very like *Illicium Griffithii*; no flowers, indeterminable.

## 3. *Magnolia*.

### *Dichotomous Key to the Species.*

Leaves oblong-obovate rounded at the apex. *Magnolia grandiflora*.

Leaves lanceolate-oblong, acuminate at the apex. *Magnolia pumila*.

***Magnolia grandiflora*** LINN. Sp. Pl. ed-2, p. 755; DC. Prodr. I. p. 80; MATSUM. in Tōkyō Bot. Mag. XV. p. 85; MATSUM. et HAYATA Enum. Pl. Formos. p. 10.

HAB. Shintiku, Taihoku, cultivated in gardens.



**Magnolia pumila** ANDR. Bot. Mag. t 977; DC. Prodr. I. p. 81; HENRY List Pl. Formos. p. 16; MATSUM. Tōkyō Bot. Mag. XV. p. 85; FORBES et HEMSL. Ind. Fl. Sin. I. p. 24; ITō et MATSUM. Tent Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII. p. 283; MATSUM. et HAYATA Enum. Pl. Formos. p. 10.

*Liriodendron Coco* LOUR. Fl. Cochinch. ed-WILLD. p. 424, (fide HANCE).

*Magnolia Championi* BENTH. Fl. Hongk. p. 8.

*Liriodendron liliifera* LINN. Sp. Pl. ed-2, p. 755, (fide BLUME); WILLD. Sp. Pl. II. p. 1257.

HAB. Taihoku, Tamsui, cultivated.

DISTRIB. Loo-choo; Southern China: Hongkong.

#### 4. *Michelia* LINN.

##### *Dichotomous Key to the Formosan Species.*

Leaves elongate, 15 cm. long ..... *Michelia longifolia*.

Leaves rather small, 5-8 cm. long. (1)

(1) Leaves ovately lanceolate or obovately oblong, flower-buds usually

smooth, velvety ..... *Michelia compressa*.

Leaves obovately oblong, flower-buds roughly hirsute . *Michelia fuscata*.

***Michelia compressa*** MAXIM. in Mém. Biol. VIII. p. 506; FRANCH. et SAY. Enum. Pl. Jap. I. p. 15; HENRY List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 10.

HAB. South Cape, Bankinsing, Manapan.

DISTRIB. Japan.

***Michelia fuscata*** BLUME; FORBES et HEMSL. Ind. Fl. Sin. I. p. 24; HENRY List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. XV. p. 85; MATSUM. et HAYATA Enum. Pl. Formos. p. 11.

*Magnolia fuscata* ANDR. Bot. Mag. t. 1008; DC. Prodr. I. p. 81.

*Liriodendron Figo* LOUR. Fl. Cochinch. ed-WILLD. p. 424.

HAB. Taihoku, Tainan, Daiburin, Bankinsing.

DISTRIB. Southern China.

***Michelia longifolia*** BLUME; Bot. Mag. p. 12, tt. 2 et 3; MATSUM. in



Tōkyō Bot. Mag. XV. p. 85; MATSUM. et HAYATA Enum. Pl. Formos. p. 11

HAB. Taihoku, Shagiō, cultivated.

### 5. *Kadsura* JUSS.

***Kadsura japonica*** LINN.; DC. Prodr. I. p. 83; MIQ. Prol. Fl. Jap. p. 255; FRANCH. et SAV. Enum. Pl. Jap. I. p. 18; HENRY List Pl. Formos. p. 16; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. XII. p. 285; MATSUM. in Tōkyō Bot. Mag. XV. p. 85; MATSUM. et HAYATA Enum. Pl. Formos. p. 12; HAYATA Fl. Mont. Formos. p. 12.

*Kadsura chinensis* HANCE in BENTH. Fl. Hongk. p. 8; FORBES et HEMSL. Ind. Fl. Sin. I. p. 25.

*Uvaria japonica* LINN. Sp. Pl. ed-2, p. 756; THUNB. Fl. Jap. p. 237.

HAB. Kagi: Kishirei.

DISTRIB. Japan and China.

The plant is found commonly in the lower districts. But it sometimes ascends to the hilly regions in the Prefecture of Kagi.

## Anonaceæ.

### *Conspectus of the Formosan Genera.*

- (1) Petals 2-seriate, one of both series imbricate in bud. Stamens many, closely-packed ..... *Uvaria*. 1
- Petals valvate or open in bud. (2)
- (2) Petals spreading flat or concave at the base only. .... *Artabotrys*. 2
- Petals thick and rigid, connivent. (3)
- (3) Ovules solitary; fruits fleshy, of many connate carpels ..... *Anona*. 3
- Ovules 2-many; outer petals broad ..... *Melodorum*. 4

### 1. *Uvaria* LINN.

***Uvaria*** sp. HAYATA Materials for a Flora of Formosa p. 22. Scandent, leaves narrowed or obovately narrowed, abruptly acute at the apex, acute at the base, 20 cm. long, 6 cm. broad, glaucous beneath, costa and veins prominent.



HAB. Mt. Chōran.

OBSERV. A large twining plant; near *U. clusiflora* MERRILL of the Philippines.

## 2. *Artabotrys* R. BR.

***Artabotrys odoratissimus*** R. BR.; BENTH. Fl. Hongk. p. 10; HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 54; FORBES et HEMSLE. Ind. Fl. Sin. I. p. 26; HENRY List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. XV. p. 86; MATSUM. et HAYATA Enum. Pl. Formos. p. 12.

*Artabotrys hamata* BLUME Fl. Jav. Anon. p. 60, t. 29.

*Uvaria uncatata* LOUR. Fl. Cochinch. ed.-WILLD. p. 426.

*Unona uncinata* DC. Prodr. I. p. 90.

*Unona hamata* DUNAL; DC. Prodr. I. p. 90.

*Unona odoratissima et hamata* ROXB. Fl. Ind. II. p. 666.

HAB. Ringaryō, Shintiku, Toseikaku, Kōshūn, Taihoku, Paelina, Tamsui.

DISTRIB. East Indian Peninsula, Ceylon and Java.

## 3. *Anona* LINN.

***Anona squamosa*** LINN. Sp. Pl. ed.-2 p. 757; DC. Prodr. I. p. 85; ROXB. Fl. Ind. II. p. 657; HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 78; HENRY List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. IV. p. 86; MATSUM. et HAYATA Enum. Pl. Formos. p. 13.

NOM. Indig. Shih-chia-kuo, Fan-li-chih, Foton-kuo, Fan-li, (ex HENRY).

HAB. Shōliukiūtō and Kigo, Taichū, Shōkwa, Takow.

DISTRIB. Introduced from America.

## 4. *Melodorum* DUN.

***Melodorum Oldhami*** HEMSLE. in FORBES et HEMSLE. Ind. Fl. Sin. I. p. 27; HENRY List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. XV. p. 86; MATSUM. et HAYATA Enum. Pl. Formos. p. 13; HAYATA Fl. Mont. Formos. p. 46.

HAB. Nantō: Kashinokiyama, Goshōrin, Nankō, Shifun, Biōritsu.

DISTRIB. An endemic plant.



## Menispermaceæ.

*Conspectus of the Formosan Genera.*

- (1) Flowers 3-merous. Ovaries usually 3. Seeds horse-shoe-shaped, albumen copious. (2).  
 Flowers 3-5-merous. Ovaries usually solitary, seeds horse-shoe-shaped, albumen scanty ..... *Stephania*. 3
- (2) Styles subulate ..... *Cocculus*. 1  
 Styles forked ..... *Pericampylus* 2

1. *Cocculus* DC.*Dichotomous Key to the Formosan Species.*

Erect Shrub ..... *C. laurifolius*.  
 Scandent. (1)

- (1) Leaves rounded or ovately rhomboid ..... *C. Thunbergii*.  
 Leaves obovately cuneate or linear ..... *C. cuneatus*.

**Cocculus cuneatus** BENTH.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 28;  
 HENRY List Pl. Formos. p. 16; MATSUM. et HAYATA Enum. Pl. Formos.  
 p. 14.

*Nephroica cuneifolia* MIERS, in "Ann. Nat. Hist. ser. 3, XIX. p. 26."

HAB. Tainan, Hōzan, Kelung, Mt. Takow, Bōryō.

DISTRIB. An endemic plant.

**Cocculus Thunbergii** DC. Prodr. I. p. 98; HANCE in Journ. Linn. Soc. XIII. p. 99; MAXIM. in Mém. Biol. XI. p. 651; FRANCHET Pl. David. p. 24; FORBES et HEMSL. Ind. Fl. Sin. I. p. 28; HENRY List Pl. Formos. p. 16; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 345; PALIBIN Conspect. Fl. Koreæ I. p. 19; MATSUM. et HAYATA Enum. Pl. Formos. p. 14.

*Cocculus ovalifolius* DC. Prodr. I. p. 99; BENTH. Fl. Hongk. p. 13.

*Cocculus diantherus* HOOK. et ARN. Bot. Beech. Voy. p. 167.



HAB. Kelung, Pachina, Tamsui, Takow.

DISTRIB. Japan, eastern China.

*Pericampylus* MIERS.

**Pericampylus incanus** MIERS.; BENTH. FL. Hongk. p. 13; HANCE in Journ. Linn. Soc. XIII. p. 99; HOOK. f. FL. Brit. Ind. I. p. 102; FORBES et HEMSL. Ind. FL. Sin. I. p. 29; HENRY List Pl. Formos. p. 16; ITÔ et MATSUM. Tent. FL. Lutch. in Journ. Sci. Coll. Imp. Univ. Tôkyô XII. p. 286; DIELS FL. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 344; MATSUM. et HAYATA Enum. Pl. Formos. p. 15.

*Cocculus incanus* COLEBROOKE in Trans. Linn. Soc. XIII. p. 57, t. 6, f. 1; MAXIM. in Mém. Biol. XI. (1883) p. 650.

*Menispermum villosum* ROXB. FL. Ind. III. p. 812.

HAB. Agincort, Bankinsing.

DISTRIB. Sikkim, Assam, Java, southern China, Kwangtung, Hongkong.

I doubt that the Formosan plant should really belong to this genus, for the filaments connate to the midway of the length, but not distinct.

*Stephania* LOUR.

*Dichotomous Key to the Formosan Species.*

Leaves cordately, deltoid peltate, sinuate at the base. *Stephania tetrandra*.

Leaves perfectly ovate, quite rounded at the base. *Stephania hernandifolia*.

**Stephania hernandifolia** WALP. Rep. I. p. 96; BENTH. FL. Hongk. p. 13; A. GRAY Bot. Jap. p. 380; BENTH. FL. Austral. I. p. 57; MIQ. Prol. FL. Jap. p. 108; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 20; HOOK. f. et THOMS. in HOOK. f. FL. Brit. Ind. I. p. 103; MAXIM. in Mém. Biol. XI. (1886) p. 643, t. 3, fig. 1-9; FORBES et HEMSL. Ind. FL. Sin. I. p. 29; HENRY List Pl. Formos. p. 16; ITÔ et MATSUM. Tent. FL. Lutch. in Journ. Sci. Coll. Imp. Univ. Tôkyô XII. p. 288; DIELS FL. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 345; MATSUM. et HAYATA Enum. Pl. Formos. p. 16.



*Stephania longa* LOUR. FL. Cochinch. ed-WILLD. p. 747.

*Cissampelos discolor* DC. Prodr. I. p. 101.

*Cissampelos hernandifolia* WILLD. Sp. Pl. IV. p. 100; ROXB. FL. Ind. III. p. 842; WIGHT Ic. Pl. Ind. Or. t. 939.

*Cissampelos hexandra* ROXB. FL. Ind. III. p. 842.

*Menispermum japonicum* THUNB. FL. Jap. p. 193; WILLD. Sp. Pl. IV. p. 827.

*Cocculus japonicus* DC. Prodr. I. p. 96; SIEB. et ZUCC. FL. Jap. Fam. Nat. in Abh. Akad. Muench. IV. Pt.-2, (1845) p. 189.

HAB. Taihoku, Sintiku, Suiteiryō, Niki, Biōritsu.

DISTRIB. Japan, southern China, the Philippines, Malay, India, Ceylon, Africa, Australia and Polynesia.

**Stephania tetrandra** S. MOORE (PL. VIII.) in Journ. Bot. (1875) p. 225; MAXIM. in Mém. Biol. XI. p. 646, t. 2; FORBES et HEMSLEY. Ind. FL. Sin. I. p. 30; HENRY List Pl. Formos. p. 17; MATSUM. et HAYATA Enum. Pl. Formos. p. 16; HAYATA Materials for a Flora of Formosa p. 23. Stem more or less lignified voluble, striate, glabrous. Leaves reniformed, irregularly repandate or entire, abruptly acute at the apex, obtuse and mucronate at the very extremity, reniformedly cordate at the base, peltate, (sinus rounded), glabrous, glaucous beneath, chartaceo-membranaceous, 7 cm. long, 8 cm. broad, petioles very slender striate 6 cm. long, inserted near the base of the blades. Panicles supra-axillary as long as petioles, pubescent, flowers capitately or umbellately arranged at the apex of the branches, pedicels very short, 4 mm. long. Drupes compressedly globose, 5 mm. in diameter, glabrous.

HAB. Tamsui.

Near *Stephania dahurica* DC. and also *S. hernandifolia*; but differs from the former in having nearly rounded but not lobed leaves, and from the latter in roundedly sinuated base of the leaves. In *S. hernandifolia* the sinus at the base of the leaves is acute but not rounded.

**Sp.** Shrubby, scandent, tomentose. Leaves alternate, ovate or elliptical, obtusely acuminate, shortly petiolate, 7 cm. long, 4 cm. broad, glabrous



above, hispidly tomentose beneath, costas and veins prominent, margin entire. Racemes few-flowered, axillary.

Very interesting plant. This is the only scandent shrubby plant belonging to this family from Formosa.

*Species not yet represented in our Herbarium.*

*Tinospora dentata* DIELS in ENGL. Pfl.-reich Menispermaceæ p. 139.

HAB. Bankinsing.

*Pericampylus formosanus* DIELS in ENGL. Pfl.-reich. Menispermaceæ p. 221.

HAB. (FAURIE! No. 113.)

*Cyclea gracillima* DIELS in ENGL. Pfl.-reich Menispermaceæ p. 319.

HAB. Takow, (HENRY!)

Berberideæ.

*Conspectus of the Formosan Genera.*

- |  |   |
|--|---|
| (1) Climbing shrubs. Flowers unisexual. ....                               | {Sepals 6. <i>Stauntonia</i> . 1<br>Sepals 3. <i>Akebia</i> . 2 |
| Stem 0 or erect, shrubs or herbs. Flowers hermaphrodite,<br>carpels 1. (2) |   |
| (2) Ovules erect, basal. Shrubs. Fruits berried .....                      | <i>Berberis</i> . 3   |
| Ovules superposed along a ventral suture. (3)                              |   |
| (3) Leaves simple not lobed, ovules a few. ....                            | <i>Epimedium</i> . 4  |
| Leaves palmately lobed, ovules many. ....                                  | <i>Podophyllum</i> . 5  |

1. *Stauntonia* DC.

***Stauntonia hexaphylla*** DECNE. "in Ann. Sc. Nat. ser. 2, XII. p. 105"; SIEB. et ZUCC. Fl. Jap. I. p. 148, t. 11; MAXIM. in ENGL. Bot. Jahrb. VI. p. 58; MIQ. Prol. Fl. Jap. p. 197; FRANCH. et SAV. Enum. Pl. Jap. I. p. 21; FORBES et HEMSL. Ind. Fl. Sin. I. p. 30; T. ITÔ in Journ. Linn. Soc. XXII. (1887) p. 423; MATSUM. in Tōkyō Bot. Mag. XII. p. 54;



PALIBIN Conspect. Fl. Koreæ I. p. 21; MATSUM. et HAYATA Enum. Pl. Formos. p. 17.

*Rayania hexaphylla* THUNB. Fl. Jap. p. 149.

HAB. Hokkōkei.

DISTRIB. Japan, Corea and Hongkong.

## 2. *Akebia* DECNE.

***Akebia longeracemosa*** MATSUM. in Tōkyō Bot. Mag. XIII. p. 18; MATSUM. et HAYATA Enum. Pl. Formos. p. 17 t. 2. Shrub scandent. Leaves ever-green, long petiolate, digitately 5-foliolate, leaflets petiolulate, oblong, obtuse at both ends, or obovate-oblong, cuneate, emarginate and mucronate at the apex, glabrous. Flowers monœcious, long pedunculate. Fl. ♂ numerous, 25–30, arranged on a long raceme; pedicels very slender, spreading, nearly 5 mm. long, bracts paleaceous, linear. Sepals 3, reflexed, elliptico-oblong, somewhat obtuse, 3 mm. long, 2 mm. broad, glabrous. Fl. ♀: few-flowered, 40 mm. in diameter, long pedicellate 45–50 mm. long; sepals 3, black when dried, 18–20 mm. long, 8–12 mm. broad. Racemes 65–70 mm. long, 8 mm. broad. Carpels 6; ovary linear, 5 mm. long; staminodes very small; stamens 3 mm. long.

HAB. Taichū: Daibōhōzan.

DISTRIB. An endemic plant.

***Akebia* sp.** HAYATA Fl. Mont. Formos. p. 46.

HAB. Morrison.

Near *A. longeracemosa* MATSUM., but differs from it in having trifoliolate leaves.

## 3. *Berberis* LINN.

### *Dichotomous Key to the Formosan Species.*

Leaves pinnate.....*Berberis nepalensis*.

Leaves simple

Fruits black.....*Berberis Kawakamii*.

Fruits red.....*Berberis morrisonensis*.



**Berberis nepalensis** SPRENG.; HANCE "in Journ. Bot. (1892) p. 2"; HOOK. f. Fl. Brit. Ind. I. p. 109; FORBES et HEMSL. Ind. Fl. Sin. I. p. 31; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 18; HAYATA Fl. Mont. Formos. p. 18.

*Mahonia nepalensis* DC. Prodr. I. p. 109; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 338.

*Berberis Bealei* FORTUNE Bot. Mag. t. 4852.

*Ilex japonica* THUNB. Fl. Jap. p. 79, et Ic. Pl. Jap. t. 12.

HAB. Ganzan, Arizan, Kelung, Taiton.

DISTRIB. Khasia, central China, Japan and the Philippine islands. Mr. E. D. Merrill remarks that this Formosan form is just the same as the Luzon one.

**Berberis Kawakamii** HAYATA (Pl. IX.) Materials for a Flora of Formosa p. 24. Shrub erect, many-branched, branches angulate sulcate, spines ternate 2-3 cm. long. Leaves clustered, coriaceous, obovate, oblanceolate or lanceolate, acute, cuneate at the base, nearly sessile, remotely spinulosely dentate, 5-3 cm. long, 2-1 cm. broad, veins impressed on the upper side, but prominent on the under side, veinlets prominent on both sides, more pallid beneath. Flowers 10-15-fasciculate, perulate at the base, perules 2-3-seriate, scaly broadly triangular shortly aristate, pedicels inclined, 1 cm. long. Sepals 5-6, unequal, lanceolate, acuminate or subulate, longer than petals, the outermost the smallest. Petals 5-6, roundedly oblong,  $4\frac{1}{2}$  mm. long, obtuse or rounded, with 2-glandules at the base inside. Stamens 5-6,  $2\frac{1}{4}$  mm. long, filaments  $1\frac{1}{4}$  mm. long, incrassate, anthers 1 mm. long, oblong, connectives slightly produced, truncate. Carpels shortly cylindrical 3 mm. long, stigma sessile peltate. Berries 5-10-clustered, nigricant, oblongly ovoid, 7 mm. long, obtuse at the base, 2-3-seeded; seeds crescent-shaped, curved, 5 mm. long, minutely rugulose fuscous, peduncles 1 cm. long.

HAB. Mt. Morrison.

The present plant comes very near *B. barandana* VIDAL; but differs from it in having much shorter peduncles and especially in the number of ovules contained in ovaries. *B. barandana* has 1-ovule, while our plant has



always 2 or sometimes 3 ovules. It also bears some resemblance to *B. xanthoxylon* HASK. and *B. Wallichiana*, but differs from both in having more sparsely serrated leaves, and especially from the latter by its much more rounded fruits.

***Berberis morrisonensis*** HAYATA (Pl. X.) Materials for a Flora of Formosa p. 25. Shrub, erect, many-branched, branches with ternate spines. Leaves clustered coriaceous, ovately spatulate, rounded at the apex, aristately mucronate or obtuse, spinulosely dentate on the margin, cuneate at the base, sessile or shortly petiolate, 15 mm. long, 7 mm. broad. Berries 3-clustered globosely ellipsoid, obtuse on both ends, reddish, 9 mm. long, 3-seeded; stigma small, sessile; seeds crescent-shaped, 4 mm. long, smooth, scarlet, peduncles  $1\frac{1}{2}$  cm. long.

HAB. Mt. Morrison.

Near *B. dictyophylla* FRANCH.; but differs from it in having 3-fasciculate fruits which are much more rounded than those of FRANCHET's species.

#### 4. *Epimedium* LINN.

***Epimedium*** sp. MATSUM. et HAYATA Enum. Pl. Formos. p. 18. Perennial herb. Radical leaves long petiolate, petioles 30-40 cm. long, trifoliate, petiolulate, petiolules 5 cm. long, shorter than the blades, nodes of petiolules swollen, blades 8-10 cm. long, 7 cm. broad, ovately elliptical acuminate at the apex, strongly oblique at the base, auriculate, cordate, serrulate, (teeth setaceous) 8-10-nerved, glabrous, glaucous beneath.

HAB. central parts of the island.

#### 5. *Podophyllum* LINN.

***Podophyllum pleianthum*** HANCE in Journ. Bot. (1883) p. 175; FORBES et HEMSL. Ind. Fl. Sin. I. p. 33; HENRY List Pl. Formos. p. 17; MATSUM. et HAYATA Enum. Pl. Formos. p. 19.

HAB. Tamsui.

DISTRIB. Southern China: Kwangtung.



## Nymphæaceæ.

*Conspectus of the Formosan Genera.*

- (1) Sepals and petals 3 each, free. Carpels free. Ovules few.  
     Seeds albuminous ..... *Brasenia* 1
- Sepals and petals 4-5, petals and stamens indefinite. (2)
- (2) Carpels confluent with one another or with the disk into  
     one ovary. Ovules many. Seeds albuminous ..... *Euryale* 2
- Carpels irregularly scattered, sunk in pits of the turbinate  
     disk. Ovules 1-2. Seeds exalbuminous ..... *Nelumbo* 3

1. *Brasenia* SCHREB.

***Brasenia purpurea*** CASP. "in Journ. Sc. Acad. Lisb. IV. p. 312";  
 HAYATA Materials for a Flora of Formosa. p. 25.

*Hydropeltis purpurea* RICHARD; DC. Prodr. I. p. 112.

*Brasenia peltata* PURSH.; HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind.  
 I. p. 113; FRANCH. et SAV. Enum. Pl. Jap. I. p. 25.

HAB. Giran: Kentōzan.

DISTRIB. Commonly found in Japan, distributed in eastern North  
 America and eastern Australia. Not yet known from China.

OBSERV. Flowers solitary, sessile, pedunculate; leaves peltate, elliptical,  
 10 cm. long, 6.5 cm. broad.

2. *Euryale* SALISB.

***Euryale ferox*** SALISB.; KONIG. et SIMS. Ann. Bot. II. p. 74; DC.  
 Prodr. I. p. 114; Bot. Mag. t. 1447; FORBES et HEMSL. Ind. Fl. Sin. I. p.  
 33; HENRY List Pl. Formos. p. 17; MATSUM. et HAYATA Enum. Pl. Formos.  
 p. 19.

HAB. in swamps in the vicinity of Taihoku.

DISTRIB. Northern India and Japan.



3. *Nelumbo* GÆRTN.

*Nelumbo nucifera* GÆRTN.; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 26; PALIBIN Conspect. Fl. Koreæ I. p. 20; MATSUM. et HAYATA Enum. Pl. Formos. p. 19.

*Nelumbium speciosum* WILLD. Sp. Pl. II. p. 1258; DC. Prodr. I. p. 113; Bot. Mag. t. 903; ROXB. Fl. Ind. II. p. 647; LEDEB. Fl. Ross. I. p. 83; (var. *caspicum*); HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 116; AIT. Hort. Kew. ed—2, III. p. 332; FORBES et HEMSL. Ind. Fl. Sin. I. p. 34; HENRY List Pl. Formos. p. 17; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII. p. 291.

*Nymphæa Nelumbo* LOUR. Fl. Cochinch. ed—WILLD. p. 416; THUNB. Fl. Jap. p. 223.

HAB. Takow. (cultivated).

DISTRIB. From Persia through warm regions of Asia to Australia.

## Papaveraceæ.

*Conspectus of the Formosan Genera.*

- (1) Flowers regular (2)  
 Flowers irregular ..... *Corydalis* 3  
 (2) Stigmas 4 or more, radiating on a sessile disk ..... *Papaver* 1  
 Stigmas 4-6, radiating from the top of a depressed style .... *Argemone* 2

1. *Papaver* LINN.

*Papaver somniferum* LINN.; DC. Prodr. I. p. 119; FORBES et HEMSL. Ind. Fl. Sin. I. p. 34; HENRY List Pl. Formos. p. 17; MATSUM. et HAYATA Enum. Pl. Formos. p. 20.

HAB. Kagi, Shinyeshō, cultivated.

DISTRIB.

2. *Argemone* LINN.

*Argemone mexicana* LINN.; "ROXB. Fl. Ind. II. p. 571;" HOOK. f.







Univ. Tōkyō XII. p. 294; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 355; PALIBIN Conspect. Fl. Koreæ I. p. 24; MATSUM. et HAYATA Enum. Pl. Formos. p. 20.

*Corydalis aurea* WILLD. var. *speciosa* REGEL.; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 275.

*Corydalis heterocarpa* SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 173.

*Corydalis speciosa* MAXIM. Prim. Fl. Amur. p. 39.

*Corydalis Wilfordi* REGEL.; MIQ. Prol. Fl. Jap. p. 201; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 30, et II. p. 275.

*Fumaria lutea* THUNB. Fl. Jap. p. 277.

*Fumaria pallida* THUNB.; WILLD. Sp. Pl. III. p. 865.

HAB. Shintiku, Taichū, Biōritsu, Hakkakurin.

DISTRIB. Japan, Bonin, central China, Siberia and North America.

***Corydalis taitōensis* HAYATA** Materials for a Flora of Formosa p. 27. A small perennial herb, 8 cm. high; roots fibrous more or less fleshy. Radical leaves pinnate 8 cm. long (including petioles) glabrous, ovate in outline, petioles 4 cm. long, gradually dilated at the base, more or less incrassate, pinnæ distant 2 cm. long (including petiolules), 1 cm. broad, pinnules sessile, obovate, 3-lobate or lobulate, lobules obscurely mucronate. Cauline leaves nearly the same as radical ones. Racemes 5-8 cm. long, bracteate, somewhat densely flowered, bracts obovate obtuse 5 mm. long, 2½ mm. broad, pedicels 6 mm. long. Sepals 2, minute, deciduous, obliquely rounded 1½ mm. in diameter, irregularly dentate, rounded at the base, peltately or cordately affixed. Petals 4, one of the exterior ones spurred at the base, 18 mm. long (including spurs) 5 mm. broad, erect or slightly recurved, truncate at the apex, shortly callously mucronate marginate, concave near the apex, the other narrower 13 mm. long, 3 mm. broad, truncate and carnosely mucronate at the apex, gibbose near the apex; interior ones narrowed, long clawed, 13 mm. long including claws, claws 7 mm. long, blades narrowed, oblique, slightly auriculate, 7 mm. long, 2½ mm. broad, truncate and carnosely mucronate at the apex, carinate on the back, keels slightly produced at the apex, 1½ mm. broad. Filaments



12 mm. long, 2 mm. broad, complanate, narrowed towards the apex.

HAB. Taitō: Daironkōsha.

**Corydalis kelungensis** HAYATA Materials for a Flora of Formosa p. 27. Herb, very slender, 30 cm. high, ascendent, quite glabrous. Radical leaves long petiolate, many times ternate, 30 cm. long (including petioles), petioles very much slender, 15 cm. long, long petiolulate, pinnules obovate 2 cm. long, 1 cm. broad, rounded at the apex, or 2-3-lobate, gradually narrowed reaching the petioles, more pallid beneath. Racemes 10 cm. long, loosely flowered, bracts ovate, 5 mm. long, pedicels 1 cm. long. Flowers nearly 18 mm. long. Sepals 2, deciduous. Petals 4, unequal, connate, one of the exterior larger, boat-shaped, 18 mm. long including spurs, spurred at the base, (spurs 9 mm. long, 3 mm. broad, obtuse straight or more or less curved at the apex), the other flat 13 mm. long, long clawed at the base, blades rounded 7 mm. broad, emarginate or sinuate at the apex, gradually narrowed and reaching the claw; interior ones connate together, narrowed, strongly carinate on the back at the apex, 13 mm. long.

HAB. Kelung: Arikō.

The flowers are somewhat like those of *C. decumbens* PERS.; but the leaves are quite different.

**Corydalis formosana** HAYATA Materials for a Flora of Formosa p. 26. Herb, 40-50 cm. high, many-branched, very glabrous, stem sulcate flexuose. Cauline leaves 15 cm. long (including petioles), 7 cm. broad bipinnate, petioles 4 cm. long, pinnae remote, ovate, 5 cm. long, 3 cm. broad, petiolules 2 cm. long, pinnules subsessile obovate, trilobate, or irregularly lobulate, rounded at the apex, lobules obscurely mucronate. Racemes 13 cm. long, pedunculate 4 cm. long, bracts ovate, acute, 4 mm. long, pedicels 4 mm. long. Sepals very small, obliquely rounded, obtuse,  $1\frac{1}{2}$  mm. long, rounded at the base. Petals, exterior ones unequal, one of them 17 mm. long (including spur) 4 mm. broad, broadly emarginate and slightly mucronate at the apex, winged near the apex on the back (wings 2 mm. long  $1\frac{1}{2}$  mm. broad), spurred at the base, spurs 4 mm. long, 2 mm. broad, abruptly recurved near the apex, rounded at the apex; the other narrowed, 12 mm.



long, 2 mm. broad, dilated towards the apex, rounded and slightly emarginate at the apex, winged near the margin on the back, wings triangular 1 mm. broad; interior ones much narrower, 12 mm. long, clawed, claws  $5\frac{1}{2}$  mm. long,  $\frac{1}{2}$  mm. broad, blades obliquely rectangular, 6 mm. long,  $2\frac{1}{2}$  mm. broad, rounded emarginate and mucronate at the apex, winged near the apex on the back, wings shortly produced 1 mm. broad. Stamens 12 mm. long, filaments complanate,  $1\frac{1}{2}$  mm. broad, gradually narrowed towards the apex. Capsules linear  $2\frac{1}{2}$  cm. long, (including beaks) 4 mm. broad, beaked at the apex, beaks 6 mm. long. Seeds orbicular compressed, minutely and elegantly concentrically punctate,  $1\frac{1}{2}$  mm. in diameter, arils suborbicular,  $1\frac{1}{2}$  mm. long.

HAB. Taitō: Taruko, Coll. G. NAKAHARA, 1906, June, (No. 710).

Very near *C. Balansæ* PRAIN; but differs from it in having larger flowers and very much smaller bracts.

## Cruciferæ.

### *Conspectus of the Formosan Genera.*

- (1) Pods narrow, long or short, dehiscing throughout their length, terete or compressed dorsally (parallel to the septum.) (2).  
Pods short, dehiscing throughout their length, compressed laterally (at right angles to the septum.) (6).
- (2) Cotyledons accumbent, i.e. radicle facing the edges of both cotyledons (3)  
Cotyledons longitudinally folded or deeply grooved..... *Brassica*. 5
- (3) Pods narrow long.  
Pods short, broad, glabrous herbs ..... *Cochlearia*. 4
- (4) Sepals spreading, pods tumid. .... *Nasturtium*. 1  
Sepals erect, pods not tumid. (5)
- (5) Pods flat, strongly nerved ..... *Arabis*. 2  
Pods hardly nerved ..... *Cardamine*. 3
- (6) Pods many-seeded, valves boat-shaped, carinate. .... *Capsella*. 6  
Pods didymous, valves 1-seeded, indehiscent ..... *Senebiera*. 7



1. *Nasturtium* Br.*Dichotomous Key to the Formosan Species.*

- (1) Plants small, nearly 15 cm. high.....*Nasturtium sikokianum*  
 Plants much larger, more than 30 cm. high. (2)
- (1) Leaves not embracing the stem .....*Nasturtium montanum*  
 Leaves embracing the stem, auriculately rounded at the base.  
*Nasturtium globosum*

***Nasturtium sikokianum*** FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 277; MATSUM. in Tōkyō Bot. Mag. XIII. p. 61; MATSUM. et HAYATA Enum. Pl. Formos. p. 22.

HAB. Hikaku.

DISTRIB. Japan.

***Nasturtium montanum*** WALL.; BENTH. Fl. Hongk. p. 16; HOOK. f. Fl. Brit. Ind. I. p. 134; MIQ. Prol. Fl. Jap. p. 3; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 32; FRANCHET Pl. David. p. 31; FORBES et HEMSL. Ind. Fl. Sin. I. p. 40; HENRY List Pl. Formos. p. 17; ITŌ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII. p. 297; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 357; PALIBIN Conspect. Fl. Koreæ I. p. 25; MATSUM. et HAYATA Enum. Pl. Formos. p. 22.

*Sinapis pusilla* ROXB. Fl. Ind. III. p. 125.

HAB. Taihoku, Tamsui, Takow.

DISTRIB. China, Japan, Korea, India to Java.

***Nasturtium globosum*** TURCZ.; HANCE in Journ. Linn. Soc. XIII. p. 76; FRANCHET Pl. DAVID. p. 31; FORBES et HEMSL. Ind. Fl. Sin. I. p. 39; HENRY List Pl. Formos. p. 17; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 357; MATSUM. et HAYATA Enum. Pl. Formos. p. 22.

*Nasturtium cantoniense* HANCE in Journ. Bot. (1865) p. 378.

HAB. South Cape. The species not yet represented in our Herbarium.

DISTRIB. Eastern Siberia and China.



2. *Arabis* LINN.*Dichotomous Key to the Formosan Species.*

Leaves lyrate lobed ..... *Arabis morrisonensis*  
 Leaves nearly entire or a very sparsely toothed..... *Arabis alpina*

***Arabis morrisonensis*** HAYATA (Pl. XI.) Materials for a Flora of Formosa p. 29 *Arabis taraxacifolia* HAYATA Fl. Mont. Formos. p. 49, (non ANDERS). Herb slightly lignified at the base, perennial, hirsute, hairs simple or branched  $\frac{1}{2}$  mm.-1 mm. long, stoloniferous, decumbent. Stem 20 cm. long, branches leafy. Radical leaves clustered radiately arranged, long petioled 3 cm. long including petioles, 6 mm. broad stellately hirsute, (hairs furcate or simple) spatulate in outline, petioles  $1\frac{1}{2}$  cm. long, as long as the blades, blades ovate lyrate, lobes 4-5 on both sides, terminal lobe obovate, obtuse. Cauline leaves simple, oblanceolate,  $3\frac{1}{2}$  cm. long, 4 mm. broad, obtuse at the apex, gradually attenuate downwards scarcely serrate on the margin, or nearly entire. Racemes terminal or axillary, 5-6 cm. long, pedicels 1-2 cm. long, bracts 0. Sepals narrower oblong,  $2\frac{1}{2}$  mm. long, 1 mm. broad, rounded and mucronate at the apex, sparingly hirsute on the back. Petals oblong-ovate, clawed, 6 mm. long, rounded or truncate at the apex. Stamens 2 mm. long. Siliques straight or slightly curved, linear, 3-4 cm. long, 1 mm broad, obtuse at both ends; styles persistent, pedicels  $1\frac{1}{2}$  cm. long. Seeds elongately oblong,  $1\frac{1}{2}$  mm. long,  $\frac{2}{3}$  mm. broad, rounded at both ends, complanate, somewhat scabrous.

HAB. Mt. Morrison.

In my paper above cited, I mention that the present plant agrees quite well with the description of *Arabis taraxacifolia* ANDERS given in HOOK. f. Fl. Brit. Ind. I. p. 136, and is also very like the European *A. erenosa* SCOP. Although I did not, at that time, see ANDERSON'S specimen, I thought that the plant must be identical with *A. taraxacifolia*. While studying here at Kew, I have compared it with the type of the same species, and have found that they are quite different. The Formosan plant is distinguishable from the Indian in having nearly erect and stouter pods,



larger seeds and smaller leaves, and also in bearing very long stolons. The Indian plant appears to be of more tender habit, with curved pods, narrower, smaller seeds, and larger, thinner leaves. Moreover, the present plant differs from *A. arenosa* SCOP. in having longer pods, smaller flowers, and leaves with more rounded lobes.

***Arabis alpina*** LINN. Sp. Fl. ed-2. p. 928; DC. Prodr. I. p. 142; HOOK. f. et THOMS. in Journ. Linn. Soc. V. p. 141; HOOK. f. et ANDERS. in HOOK. f. Fl. Brit. Ind. I. p. 135; DIELS Fl. Centr. Chin. in ENGL. Pot. Jahrb. XXIX. p. 359; LEDEB. Fl. Ross. I. p. 117; HOOK. et ARN. Bot. Beech. Voy. p. 112; HAYATA Fl. Mont. Formos. p. 49.

*Arabis albida* STEV.; DC. Prodr. I. p. 142.

*Arabis pterosperma* EDGEW. in Tran. Linn. Soc. XX. p. 33.

HAB. Mt. Morrison.

DISTRIB. Asia, from Altai westward to Europe; east Himalaya, central China northward to eastern Siberia.

My specimen does not quite agree with the description of *A. alpina* LINN. It seems to me that the plant differs a little from the type in its individual character only. The leaves of the present form are subentire, while those of the type are more or less dentate.

### 3. *Cardamine* LINN.

#### *Dichotomous Key to the Formosan Species.*

Leaves not lobed. .... *Cardamine reniformis*.

Leaves pinnately lobed. (1)

(1) Plant very much slender, leaves small, less than 4 cm. in length. .... *C. parviflora*.

Plant much larger, leaves more than 8 cm. in length. .... *C. hirsuta*.

α. lobes rounded .... *C. hirsuta* var *rotundiloba*.

β. lobes mostly obovate. .... *C. hirsuta* var *formosana*.

***Cardamine reniformis*** HAYATA Fl. Mont. Formos. p. 50, and Materials for a Flora of Formos. p. 31. Stem slender, 8-9 cm. long, erect,



glabrous. Radical leaves long petiolate, petioles nearly 5 cm. long, base slightly dilated, blades roundly reniformed, apex obtuse, base reniformed, repandately palmately 6-7-nerved, 4 cm. long as broad, subglabrous, sparsely ciliolate. Cauline leaves shortly petiolate, nearly like the radical ones. Scapes few-flowered, flowers small, 3 mm. long, pedicellate. Sepals 4, oblong-elliptical, obtuse at both ends,  $2\frac{1}{2}$  mm. long. Petals spathulate, 2 mm. long. Stamens 6,  $2\frac{1}{2}$  mm. long. Ovary cylindrical, 2 mm. long, style short, stigma globose. Siliques linear, 2 cm. long,  $1\frac{1}{2}$  mm. broad; seeds oblong, compressed  $\frac{1}{2}$  mm. long.

HAB. Mt. Morrison.

The present species differs from other species of this genus in having reniformed leaves. The leaves are somewhat like *C. asarifolia* LINN., in which species they are never cordate or reniformed. The plant is also near *C. violæfolia* O. S. SCHUTZ. from which is separable in having rather angulate leaves and very much smaller flowers. Flowers of my plant are 3 mm. long, while those of the Chinese *C. violæfolia* are 8 mm. long, or even more. Those of *C. asarifolia* LINN. are also much larger.

**Cardamine parviflora** LINN. Sp. Pl. ed-2, p. 914; DC. Prodr. I. p. 152; S. MOORE in Journ. Bot. (1875) p. 230; MAXIM. in Mém. Biol. IX. p. 10; FRANCHET Fl. David. p. 34; FORBES et HEMSL. Ind. Fl. Sin. I. p. 44; HENRY List Fl. Formos. p. 17; MATSUM. et HAYATA Enum. Pl. Formos. p. 23.

HAB. Hikaku.

DISTRIB. Europe, northern Africa, and temperate Asia; Japan to Manchuria.

As is suggested by Mr. T. NAKAI, the Formosan plant is very like or perhaps the same as, var. *manchurica* KOMAR. I have examined with Mr. T. NAKAI the co-type of the variety, and found that it is very similar to the Formosan plant.

**Cardamine hirsuta** LINN. Sp. Pl. ed-2, p. 915; BENTH. Fl. Hongk. p. 16; MAXIM. in Mém. Biol. IX. p. 6; FRANCHET Fl. David. p. 34; FORBES et HEMSL. Ind. Fl. Sin. I. p. 43; DIELS Fl. Centr. Chin. in ENGL.



Bot. Jahrb. XXIX. p. 358; Itô et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII. p. 297.

The Formosan plant which was mentioned as *C. hirsuta* in MATSUM. et HAYATA Enum. Pl. Formos. p. 23 should be divided into two, each representing a variety of the type.

var. **rotundiloba** HAYATA Materials for a Flora of Formosa p. 31. Herb glabrous, stem simple 15 cm. long, few-leaved. Radical leaves pinnate spatulate in outline, 6 cm. long (including petals) 1 cm. broad, pinnæ 4-5 on both sides, distant, subsessile rounded often oblique obscurely lobate or entire, 5-10 mm. long, petioles 3 cm. long, complanate slightly dilate at the base. Racemes 10 cm. long remotely flowered. Siliques linear straight, 22 mm. long, 1 mm. broad, obtusely truncate at the apex. Seeds minute scabrous, oblong, rounded at both ends, 1 mm. long.

HAB. Formosa: Shintiku, Goshizan.

The present variety is easily distinguishable from the type in having much more rounded lobes of leaflets. There is a specimen very much like this variety at Kew which is labelled *Cardamine hirsuta* LINN. with a question mark.

var. **formosana** HAYATA Materials for a Flora of Formosa p. 30. Stems glabrous, branched, ascendent, 15 cm. high, with some leaves. Leaves pinnately-cleft, obovate in outline, 5 cm. long (including petioles),  $2\frac{1}{2}$  cm. broad, petioles 2 cm. long, complanate or winged, lateral segments obovate rounded at the apex, 3-5 lobulate, abruptly attenuate at the base,  $2\frac{1}{2}$  cm. long. Racemes 4 cm. long, pedicels 1 mm. long, bracts obtuse  $\frac{2}{3}$  mm. long. Sepals 4, oblong,  $1\frac{1}{2}$  mm. long,  $\frac{2}{3}$  mm. broad. Petals 4, obovate, spatulate,  $1\frac{1}{2}$  mm. long, rounded or emarginate at the apex, narrowed at the base. Stamens  $1\frac{1}{2}$  mm. long, filaments complanate. Ovary cylindrical  $1\frac{1}{2}$  mm. long. Siliques linear, straight, 17 mm. long, 1 mm. broad, obtuse on both ends. Seeds oblong,  $\frac{2}{3}$  mm. long, minutely scabrous.

HAB. Taitō: Hakuhakusha.

There is a specimen very much like this in the Kew herbarium. It is labelled *C. hirsuta* LINN., but quite different from the type. As the present



plant is quite easily distinguishable from the type of *C. hirsuta* LINN., it is advisable, in my opinion, to regard it as representing a variety of the type, rather than to regard it as a form of it.

#### 4. *Cochlearia* LINN.

***Cochlearia formosana*** HAYATA (Pl. XII.) Materials for a Flora of Formosa p. 32. Herb slender glabrous, 8-10 cm. high, few-branched, radican- tant. Leaves simple or trifoliolate, petiolate, folioles cordate,  $2\frac{1}{2}$  cm. long, rounded, emarginate or mucronate at the apex, reniformed at the base, margin entire or remotely crenulate, mucronate at the sinus between crenas, membranaceous. Racemes nearly axillary, long pedunculate, few-flowered. Flowers white, small, 2 mm. long, sepals  $1\frac{1}{2}$  mm. long, spathulate, petals  $2\frac{1}{2}$  mm. long, obovate long clawed, claws  $\frac{1}{2}$  mm. long, stamens  $1\frac{1}{2}$  mm. long, with indistinct glandules at the base. Ovary 2-costate. Siliques when matured horizontally divaricate from the axis, oblong or elongate, 5 mm. long, subterete, valves pubescent, concave, obscurely reticulate. Seeds 2-seriate, many, oblong, 1 mm. long or longer, costa red, elegantly punctate.

HAB. Shinkō: Remogansha.

A very pretty herb; the only species belonging to this genus in Formosa. The flowers and fruits of the plant resemble those of *Draba*. But, on account of its being quite glabrous, it should be referred to the present genus.

#### 5. *Brassica* LINN.

***Brassica campestris*** LINN. Sp. Pl. ed-2, p. 931; DC. Prodr. I. p. 24; WILLD. Sp. Pl. III. p. 556; HOOK. f. et ANDERS. in HOOK. f. Fl. Brit. Ind. I. p. 156; FORBES et HEMSL. Ind. Fl. Sin. I. p. 46; HENRY List Pl. Formos. p. 17; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tōkyō XII p. 299; DIELS Fl. Centr. Chin. in ENGL. Jahrb. XXIX. p. 357; MATSUM. et HAYATA Enum. Pl. Formos. p. 23.

*Brassica chinensis* LINN.; DC. Prodr. I. p. 215.



*Brassica oleracea* LOUR. Fl. Cochinch. ed-WILLD. p. 481.

*Brassica Rapa* LEDEB. Fl. Ross. I. p. 216.

*Sinapis pekinensis* LOUR. Fl. Cochinch. ed-WILLD. p. 481.

HAB. Commonly cultivated.

DISTRIB. Europe to Siberia ; and cultivated in Japan and China.

## 6. *Capsella* MÖENCH.

*Capsella bursa-pastoris* MÖENCH.; DC. Prodr. I. p. 177 ; BENTH. Fl. Hongk. p. 16 ; LEDEB. Fl. Ross. I. p. 199 ; BUNGE in MAXIM. Prim. Fl. Amur. p. 46 ; MIQ. Prol. Fl. Jap. p. 7 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 38 ; HOOK. f. et ANDERS. in HOOK. f. Fl. Brit. Ind. I. p. 159 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 48 ; HENRY List Pl. Formos. p. 17 ; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tôkyô XII. p. 301 ; DIELS Fl. Centr. Chin. p. 358 ; MATSUM. et HAYATA Enum. Pl. Formos. p. 24.

HAB. Maruyama, Taihoku, South Cape.

DISTRIB. Europe, Siberia, Korea, Mongolia, Japan, China, India and Africa

## 7. *Senebiera* POIR.

*Senebiera integrifolia* DC. Prodr. I. p. 202 ; ENGL. Bot. Jahrb. VI. p. 58 ; BENTH. Fl. Austral. I. p. 82 ; OLIV. Fl. Trop. Afr. I. p. 170 ; MAXIM. in Mém. Biol. XII. (1886) p. 419 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 48 ; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. Imp. Univ. Tôkyô XII. p. 302 ; MATSUM. et HAYATA Enum. Pl. Formos. p. 25.

*Senebiera pinnatifida* HENRY List Pl. Formos. p. 18.

HAB. Kashiôtô ; Pratas island.

DISTRIB. Madagascar, southern Africa, western Australia to Loos-choo.

OBSERV. Herb, rather hardy, creeping at lower part, many branched, about 20 cm. high ; leaves alternate, spatulate or linear, entire, a little dentate on upper portions of the margin, 3 cm. long, 4 mm. broad, racemes terminal, many-flowered, flowers very small ; siliques didymous, laterally compressed rugosely reticulate ; seeds solitary in each cell.



## Capparideæ.

*Conspectus of the Formosan Genera.*

- (1) Herbs. Fruits capsular. (2).  
 Shrubs or trees. (3).
- (2) Torus short, often produced backwards into an appendix.  
     Stamens 4-6, free ..... *Cleome*. 1  
     Torus short. Stamens 8- $\infty$ , free, but sometimes not an-  
     theriferous ..... *Polanisia*. 2  
     Stamens on the gynophore. Petals open in bud..... *Gynandropsis*. 3
- (3) Sepals 4, 2-seriate, imbricate. .... *Capparis*. 4  
     Sepals 4, open in bud..... *Cratæva*. 5

1. *Cleome* LINN.

***Cleome pungens*** WILLD.; (cult.) HENRY List Pl. Formos. p. 18;  
 MATSUM. et HAYATA Enum. Pl. Formos. p. 25.

HAB. It is recorded from Pescadores by Mr. Y. TASHIRO; but I have  
 not yet seen a specimen of it.

2. *Polanisia* RAFIN.

***Polanisia viscosa*** DC. Prodr. I. p. 242; BENTH. Fl. Hongk. p. 18;  
 MAXIM. in Mém. Biol. XII. (1886) p. 419; FORBES et HEMSL. Ind. Fl. Sin.  
 I. p. 50; HENRY List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch.  
 in Journ. Sci. Coll. Imp. Univ. Tôkyô XII. p. 305; MATSUM. et HAYATA  
 Enum. Pl. Formos. p. 25.

*Polanisia icosandra* WIGHT et ARN.; WIGHT Ic. Pl. Ind. Or. t. 2.

*Cleome icosandra* et *viscosa* LINN. Sp. Pl. ed-2, p. 938; LOUR. Fl.  
 Cochinch. ed-WILLD. p. 483.

HAB. South Cape, and many other localities.

DISTRIB. Widely diffused in warm regions.



### 3. *Gynandropsis* RAFIN.

***Gynandropsis pentaphylla*** DC. Prodr. I. p. 238; HOOK. f. Fl. Brit. Ind. I. p. 171; FORBES et HEMSL. Ind. Fl. Sin. I. p. 50; HENRY List Pl. Formos. p. 18; MATSUM. et HAYATA Enum. Pl. Formos. p. 26.

HAB. Shintiku, Tainan, Nisökō, Kwashötō, Bōryō.

DISTRIB. Generally dispersed in warm regions.

### 4. *Capparis* LINN.

*Dichotomous Key to the Formosan Species.*

Leaves lanceolate. .... *Capparis membranacea* var. *angustissima* HEMSL.

Leaves oblong or elongately oblong. (1)

(1) Leaves acute at the base ..... *Capparis formosana* HEMSL.

Leaves rounded or slightly cordate at the base... *Capparis Henryi* MATSUM.

***Capparis membranacea*** GARD. et CHAMP. ; BENTH. Fl. Hongk. p. 18; FORBES et HEMSL. Ind. Fl. Sin. I. p. 50; Var. ***angustissima*** HEMSL. Ann. Bot. IX. p. 145; MATSUM. et HAYATA Enum. Pl. Formos. p. 27.

HAB. Bankinsing.

DISTRIB. An endemic plant.

***Capparis formosana*** HEMSL. in Ann. Bot. IX. p. 45; HENRY List Pl. Formos. p. 18; MATSUM. et HAYATA Enum. Pl. Formos. p. 26.

HAB. Takow, Akō, Bankinsing.

DISTRIB. An endemic plant.

***Capparis Henryi*** MATSUM. in MATSUM. et HAYATA Enum. Pl. Formos. p. 26, t. 3; HAYATA Materials for a Flora of Formosa, p. 33. Scandent shrub, branches terete greenish, glabrous. Leaves coriaceous, petiolate, elliptical or oblong, obtuse, shortly callosus-cuspidate at the apex, rounded or attenuate at the base, glabrous on both sides, quite entire, reticulate, nerves 7-9 on both sides of the costa, prominent below, very much curved; petioles



8 mm. long, glabrous; blades of the leaves 10 cm. long, 5.2 cm. broad; stipules spiny, straight, very much shorter than the petioles, but sometimes nearly equally long. Flowers 4-6-clustered, clusters superaxillary; pedicels nearly glabrous, 6 mm. long. Sepals 4, distinct, imbricate, ovately elliptical, acute, glabrescent on both sides, tomentose inside and also on the margin. Petals 4, white, imbricate, linear-oblong, obtuse, tomentose on the margin towards the apex, or glabrescent, 8-13 mm. long, 4 mm. broad. Stamens 12-16, thread like, white, 26-30 mm. long, anthers oblong, yellowish glabrous. Ovary subglobose, glabrous, long stalked (stalks 19 mm. long), 1-celled, placentas 4, ovules numerous; stigma sessile.

This is very near *C. micrantha* from which it is distinguishable only in the venation of the leaves.

HAB. Takow, Kōshūn, Fukō, Bōryō, Biōritsu, Hokkō.

DISTRIB. An endemic plant.

### 5. *Cratæva* LINN.

***Cratæva religiosa*** FORST.; DC. Prodr. I. p. 243; HOOK. f. Fl. Brit. Ind. I. p. 172; OLIV. Fl. Trop. Afr. I. p. 99; FORBES et HEMSL. Ind. Fl. Sin. I. p. 51; HENRY List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 305; MATSUM. et HAYATA Enum. Pl. Formos. p. 27.

*Copparis falcata* LOUR. Fl. Cochinch. ed-WILLD. p. 405.

*Copparis magna* LOUR. Fl. Cochinch. ed-WILLD. p. 405.

*Cratæva Adansonii* DC. Prodr. I. p. 243.

*Cratæva falcata* DC. Prodr. I. p. 243.

*Cratæva lata* DC. Prodr. I. p. 243.

*Cratæva magna* DC. Prodr. I. p. 243.

*Cratæva trifoliata* ROXB. Fl. Ind. II. p. 571.

HAB. Kelung, Pachina, Akō.

DISTRIB. China, India, tropical Africa.



## Violaceæ.

*Viola* LINN.*Dichotomous Key to the Formosan Species.*

Leaves more or less purpurascens beneath. (1)

Leaves not at all purpurascens beneath. (3)

(1) Leaves cordate more or less acute at the apex ..... *Viola Kawakamii*.

Leaves roundly cordate, rounded at the apex. (2)

(2) Leaves dotted beneath, dots black ..... *V. tozanensis*

Leaves not at all dotted ..... *V. formosana*

(3) Leaves more or less hirsute. (4)

Leaves nearly glabrous or very shortly hairy. (5)

(4) Sepals ciliolate ..... *V. diffusa*

Sepals not ciliolate ..... *V. Nagasawai*

(5) Leaves lanceolately hastate, or simply lanceolate ..... *V. Patrini*

Leaves broadly oblong, or auriculately cordate, more or less deltoid. (6)

(6) Leaves deeply auriculately cordate, broadly deltoid;

flowering stem foliose ..... *V. verecunda*

Leaves more or less elongately deltoid, flowering stem not at

all foliose ..... *V. japonica*

***Viola Kawakamii*** HAYATA Fl. Mont. Formos. p. 52, and Materials for a Flora of Formosa p. 33. Slender herb. Leaves long petiolate, stipulate, petioles slender, 10–15 cm. long, blades hastately cordate, acuminate or obtuse, crenulate, pilose at the sinus between the crenas, other parts glabrous, glaucously violascent, nearly 3 cm. long, 2 cm. broad, stipules laciniate, a little adnate to the petioles. Flowers (opened) 1.5 cm. in diameter, long pedunculate, peduncles nearly as long as petioles, bracts 2 subulate remotely arranged, 5 mm. long. Sepals subequal, obtusely acuminate, 4 mm. long, 1 mm. broad, base produced  $\frac{1}{2}$  mm. beyond the insertion, glabrous. Upper petals and lateral ones subequal, ovately cuneate, emarginate at the apex, 12 mm. long, 5 mm. broad, the lowest one larger 15 mm. long, 9 mm. broad,



apex strongly emarginate or slightly 2-lobed, long calcarate, spurs 6 mm. long, slightly curved at the apex. Anthers subsessile, connectives complanate, produced in a membranous appendix which is 1 mm. long; 2-lower stamens calcarate on the back at the base, spurs 3 mm. long. Styles nearly straight, stigma terminal. Capsules not yet known.

HAB. Suizan.

This is near *Viola siamensis* from which it differs in having much longer spurs. Spurs are usually very short in the Siamese plant.

***Viola tozanensis*** HAYATA Fl. Mont. Formos. p. 53. Stemless herb. Leaves long petiolate, stipulate, petioles 4 cm. long, blades broadly cordate, rounded, crenulate, setulosely pubescent, beneath glaucous violascent, nearly 2 cm. long as broad, stipules laciniate, a little adnate to the petioles. Flowers patent, reflexed,  $1\frac{1}{2}$  cm. in diameter, long pedunculate, peduncles as long as petioles, bracts 2 subulate opposite 5 mm. long. Sepals nearly equally long, obtusely acuminate, 4 mm. long, 1 mm. broad, base beyond insertion 1 mm. produced, glabrous. Petals upper and side ones nearly equal, ovately cuneate, truncate at the apex, 10 mm. long, 5 mm. broad, the lowest larger, 18 mm. long, 8 mm. broad, very emarginate at the apex, base long spurred, spurs 4 mm. long, at the apex slightly curved. Anthers subsessile, connectives complanate, produced at the apex in a membrane which is 1 mm. long; 2-lower stamens spurred at the base on the back, spurs 3 mm. long. Style nearly straight, stigma sub-terminal. Capsules not yet known.

HAB. Tozan.

This is found on the large trunk of a tree. The flower is patent and of a whitish purple colour.

***Viola formosana*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 28, and HAYATA Materials for a Flora of Formosa p. 33. Stemless herb. Leaves long petiolate, stipulate, petioles slender 3-4 cm. long, twice as long as blades, blades broadly cordate rounded, crenate, pilose only at the sinus between the crenas other parts quite glabrous, glauco-violascent beneath, 2 cm. long, stipules laciniate, partly adnate to the petioles. Flowers when opened 1.5 cm. in diameter, long pedunculate, peduncles twice as long as petioles,



bracts 2, subulate, remote, 4 mm. long. Sepals nearly equally long, obtusely acuminate, 4 mm. long, 1 mm. broad, 1 mm. produced at the base beyond the insertion, quite glabrous. Petals upper and lateral ones nearly equal, ovately cuneate, emarginate at the apex, 12 mm. long, 5 mm. broad, the lowest one larger, 15 mm. long, 9 mm. broad, very emarginate at the apex, or slightly 2-lobed, long spurred at the base, spurs 5 mm. long, slightly curved. Anthers subsessile, connectives complanate, produced at the apex to a membrane which is 1 mm. long; 2-inferior stamens calcarate on the back at the base, spurs 3 mm. long. Style nearly erect, stigma terminal.

HAB. Wantan.

This is near *V. Sieboldi* MAXIM. but differs from it in having rounded leaves. The leaves of *V. Sieboldi* are much more oblong, but not quite, rounded at the apex, as is the case with the Formosan plant.

**Viola diffusa** GING. in DC. Prodr. I. p. 298; BENTH. Fl. Hongk. p. 20; MAXIM. in Mém. Biol. IX. p. 735; FRANCHET Pl. David. p. 43; FORBES et HEMSLEIGH Ind. Fl. Sin. I. p. 52; HENRY List Pl. Formos. p. 18; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 477; MATSUM. et HAYATA Enum. Pl. Formos. p. 28.

HAB. Shichiseitonzan, Kusshaku, Wantan.

DISTRIB. Himalaya and Khasia mountains; China and southern Japan.

**Viola Nagasawai** MAKINO et HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 30; HAYATA Fl. Mont. Formos. p. 52 Stemless herb, stoloniferous, leaves long petiolate, petioles slender, 3-4 cm. long, twice as long as blades, blades somewhat large, broadly cordate at the base, rounded at the apex, margin crenate, pilose above, glabrous below, 1.5-2 cm. long, stipulate, stipules 9 mm. long, subulate, lacinate, partly adnate to the petioles. Flowers (when opened) 1.5 cm. in diameter, white in a dried specimen, peduncles very long 3-4 times as long as petioles, 2-bracteate on the middle of the peduncles, bracts opposite, acuminate, 5 mm. long. Sepals subequal obtusely acuminate 5 mm. long, 1.5 mm. broad, produced at the base beyond insertion. Petals upper and lateral ones nearly equal, obovate, cuneate at



the base, 13 mm. long, the lowest one shorter, 10 mm. long, calcarate at the base, spur very short, 1 mm. long; anthers subsessile, connectives complanate, produced at the apex to a membrane of 1 mm.; 2-inferior stamens calcarate on the back at the base. Style nearly straight 2-5 mm. long, stigma terminal. Capsules 3-valved, sepals persistent. Seeds ovoid-globose, 1.3 mm. long, coats crustaceous, reticulate.

HAB. Shichiseitonzan, Taiton, Chikushiko.

**Viola Patrinii** DC. Prodr. I. p. 293; BENTH. Fl. Hongk. p. 20; MAXIM. in Mém. Biol. IX. p. 722; LEDEB. Fl. Ross. I. p. 245; MAXIM. Prim. Fl. Amur. p. 48; MIQ. Prol. Fl. Jap. p. 84; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 41; FORBES et HEMSL. Ind. Fl. Sin. I. p. 53; ITÔ et MATSUM. Tent. Fl. Lutch. p. 306; DIELS Fl. Centr. Chin. p. 476; PALIBIN Conspect. Fl. Koreæ I. p. 33; MATSUM. et HAYATA Enum. Pl. Formos. p. 30.

*Viola primulifolia* LOUR. Fl. Cochinch. ed-WILLD. p. 628.

HAB. Taiton, Urai, Rahao, Botansha, Wantan.

DISTRIB. China, India, Manchuria, Japan and Korea.

**Viola verecunda** A. GRAY Bot. Jap. p. 382; BAKER et MOORE in Journ. Linn. Soc. XVII. p. 379; MAXIM. in Mém. Biol. IX. p. 7; FORBES et HEMSL. Ind. Fl. Sin. I. p. 56; HENRY List Pl. Formos. p. 18; DIELS Fl. Centr. Chin. p. 477; PALIBIN Conspect. Fl. Koreæ, I. p. 36; MATSUM. et HAYATA Enum. Pl. Formos. p. 31.

HAB. Heichoshō, Tamsui.

DISTRIB. Eastern China, Manchuria, Japan and Korea.

**Viola japonica** LANGSD.; DC. Prodr. I. p. 295; MIQ. Prol. Fl. Jap. p. 86; MAXIM. in Mém. Biol. IX. (1877) p. 724; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 42, et II. p. 287; FORBES et HEMSL. Ind. Fl. Sin. I. p. 53; HENRY List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 207; PALIBIN Conspect. Fl. Koreæ I. p. 32; MATSUM. et HAYATA Enum. Pl. Formos. p. 29; HAYATA Fl. Mont. Formos. p. 52.

*Viola japonica* var. *pekinensis* MAXIM. "Bull. Soc. Nat. Mosc. (1879) p. 4."



BIXINEÆ.

*Viola kamtschatica* var. *pekinensis* REGEL. Pl. Rad. I. p. 230.

HAB. Tappansha, Mt. Morison, Taihoku, Shintiku, Biōritsu, Kōkwanshō, Pachina, Gilan, Heirinbi.

DISTRIB. Northern and central China and Japan.

The same as the Japanese form.

Bixineæ.

*Conspectus of the Formosan Genera.*

Flowers hermaphrodite. Sepals 4-6. Petals as many . . . .	<i>Scolopia</i> . 1
Flowers dioecious. Sepals 5 (3-6), tomentose, imbricate, deciduous.	
Petals 0. . . . .	<i>Idesia</i> . 2

1. *Scolopia* SCHREB.

*Scolopia crenata* CLOS. in "Ann. Sc. Nat. 4. ser. VIII. p. 250"; WALP. Ann. VII. p. 227; BENTH. Fl. Hongk. p. 19; HOOK. f. Fl. Brit. Ind. I. p. 191; FORBES et HEMSL. Ind. Fl. Sin. I. p. 57; HENRY List Pl. Formos. p. 18; MATSUM. et HAYATA Enum Pl. Formos. p. 31.

*Phoberos chinensis* LOUR. Fl. Cochinch. ed-Willd. p. 389.

*Phoberos scævus* HANCE in WALP. Ann. III. p. 825.

*Scolopia chinensis* et *S. acuminata* CLOS. loc. cit. pp. 249 et 251; HANCE in Journ. Linn. Soc. XIII. p. 100.

*Scolopia Oldhami* HANCE in "Ann. Sc. Nat. 5-ser. V. p. 206."

HAB. Kelung, Shintiku, Khasia, Kikō, Kōshūn, Hokuto, Tamsui.

DISTRIB. Cochinchina, China, western India and the Philippines.

2. *Idesia* MAXIM.

*Idesia polycarpa* MAXIM. in. Mél. Biol. VI. p. 9; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 45; Bot. Mag. t. 6794; HENRY List Pl. Formos. p. 18; MATSUM. in Tōkyō Bot. Mag. XII. p. 67; DIELS Fl. Centr. Chin. p. 478; MATSUM. et HAYATA Enum. Pl. Formos. p. 32; HAYATA Fl. Mont. Formos.



HAB. Taitō : Iryokukakusha ; Kagi : Burakukansha ; Kōtōshō. Akō.

DISTRIB. Central China and Japan.

## Pittosporæ.

### *Pittosporum* BANKS.

#### *Dichotomous Key to the Formosan Species.*

Leaves obtuse or even rounded at the apex. .... *P. Tobira*.

Leaves acute, acuminate or even cuspidate. (1)

(1) Leaves cuspidate at the apex, attenuate at the base. .... *P. oligocarpum*.

Leaves shortly acute or shortly acuminate at the apex. (2)

(2) Leaves undulate on the margin. .... *P. undulatum*.

Leaves entire, not undulate. (3)

(3) Leaves nearly 10 cm. long. including petioles ..... *P. formosanum*.

Leaves much larger 18 cm. long including petioles. *P. daphniphylloides*.

**Pittosporum Tobira** AIT. Hort. Kew ed-2 II. p. 27; Bot. Mag. t. 1396; DC. Prodr. I. p. 846; MIQ. Prol. Fl. Jap. p. 272; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 44; FORBES et HEMSL. Ind. Fl. Sin. I. p. 58; HENRY List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 309; PALIBIN Conspect. Fl. Koreæ I. p. 37; MATSUM. et HAYATA. Enum Pl. Formos. p. 33.

HAB. Tamsui, Shintiku, Kelung, Kōketsuzan, Hōbō.

DISTRIB. China, Japan and Korea.

**Pittosporum oligocarpum** HAYATA Materials for a Flora of Formosa p. 35. Branches slender cinerascens, ternately branched. Leaves approximately alternate at the apex of the branches, or verticillate, shortly petiolate, oblong, or oblong-lanceolate, abruptly acuminate at the apex, gradually attenuate at the base, margin entire or obscurely crenulate, costa impressed above, but elevated below, primary lateral veins nearly 10 on both sides, obscurely elevated, veinlets reticulated, inconspicuous, chartaceous, or



chartaceo-coriaceous, petioles 5–10 mm. long. Capsules solitary at the axil of the upper leaves, long pedunculate, (peduncles slender  $2\frac{1}{2}$  cm. long, nearly pendulous), globose, 7–10 mm. long, mucronate at the apex, abruptly attenuate at the base and reaching the stalks which are 1–2 mm. long, 2–3-valved, dehiscent, 4–5-seeded. Seeds irregularly angulate, 4 mm. long, reddish.

HAB. Taitō, Biōritsu, Bunsuiki.

Near *Pittosporum pauciflorum* Hook. et Arn.; but differs from it in having nearly solitary and axillary fruits.

***Pittosporum undulatum*** VENT.; DC. Prodr. I. p. 346; MUELLER, Pl. Victoria pp. 71 et 224; MATSUM. et HAYATA Enum. Pl. Formos. p. 33.

HAB. Soobonsha. It is very uncertain that the Formosan plant should really be identical with the named species.

***Pittosporum formosanum*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 32, t. 4; HAYATA Materials for a Flora of Formosa p. 34. Branches terete ferrugineo-pubescent. Leaves attenuate, petiolate, glabrous, coriaceous, obovate, or oblong-elliptical, acute or shortly cuspidate at the apex, attenuate at the base, entire or slightly crenulate, nearly 8 cm. long, 2–5 cm. broad, petioles circ. 1 cm. long. Panicles terminal 5–6 cm. long, ferrugineo-pubescent, densely flowered. Flowers very small, patent, 5 mm. long, 6 mm. in diameter. Sepals 5, distinct, ovate, obtuse, somewhat thick, glabrous 2 mm. long. Petals 5, connivent in a tube to the middle in bud, at last patent and distinct from the base, oblong, linear, 5 mm. long, 1 mm. broad, truncate on both ends. Stamens 5, filaments dilate, anthers basifixed on the back, shortly apiculate. Ovary sessile, perfectly 2-celled; style short. Capsules globose, apiculate, 6–7 mm. in diameter, dehiscent by 2-valves; valves slightly lignified. Seeds thick, exalate, smooth, globose, 4 mm. in diameter. Embryo very small, in a small cavity in the albumen near the hilum; cotyledons indistinct.

Comes near *P. pauciflorum* Hook. from which it differs in having very much smaller flowers and ascending or spreading, but not pendulous, pe-



duncles. I have seen at Kew a specimen from Hainan labelled *P. pauciflorum*. The specimen is quite in accord with the present plant.

**Pittosporum daphniphylloides** HAYATA Materials for a Flora of Formosa p. 34. Leaves petiolate, oblong or oblong-oblongeolate, abruptly acute at the apex, abruptly attenuate at the base, 15 cm. long,  $4\frac{1}{2}$  cm. broad, subentire on the margin, or obscurely repandate, coriaceous, primary lateral veins 10-15 on both sides, spreading from the costa at an angle of  $60^\circ$ , veinlets reticulate, impressed on the upper surface, but elevated on the lower surface costa impressed above, elevated below, petioles  $2\frac{1}{2}$  cm. long. Racemes clustered on the apex of the branches, or paniculate. Capsules globose, 6 mm. in diameter mucronate at the apex, 2-valved, dehiscent, valves thick coriaceous 10-15-seeded. Seeds angulate, compressed, 3 mm. long,  $2\frac{1}{2}$  mm. broad, smooth, reddish.

HAB. Taitō, Dakumsha.

This is near *P. floribundum* W. et A.; but differs from it by the fruits and leaves. There is at Kew a specimen exactly like this, labelled *Pittosporum* sp. (China, WILSON, No. 3233).

## Polygalæe.

### *Polygala* LINN.

#### *Dichotomous Key to the Formosan Species.*

Leaves much larger, longer than 10 cm. .... *P. arcuata*.

Leaves rather small, 2-3 cm. long (1).

(1) Plant erect very small, less than 12 cm. high ..... *P. Tatarinowii*.

Plant larger, procumbent at the base or erect, more than 15 cm. high.

Flowers glomerate ..... *P. glomerata*.

Flowers racemose ..... *P. japonica*.

**Polygala arcuata** HAYATA Fl. Mont. Formos. p. 54. Quite glabrous, except young branches which are slightly pubescent; stem lignified, mostly simple, not branched. Leaves petiolate, blade membranaceous somewhat thick, elliptical lanceolate, acuminate, entire, 10 cm. long, 3 cm. broad, base



attenuate to the petioles which are 1 cm. long, dark above, somewhat glaucous beneath, primary veins 4-5 on both sides, arcuate near the apex, reaching the next upper ones. Racemes axillary near the apex or terminal, 5-6 cm. long, densely many-flowered, scarcely exceeding the leaves. Flowers yellowish pedicellate, pedicels short, 2 mm. long. Sepals 5, outer ones 3, inner ones 2, deciduous, the uppermost one of the outer sepals globose, larger, rounded, saccate, 3 mm. long, 2-lower ones of the same series broadly rounded, oblique at the base,  $1\frac{1}{2}$  mm. long; 2-inner ones petaloid, oblique, oblong,  $5\frac{1}{2}$  mm. long. Petals connate, lateral ones very imbricate, 7 mm. long, rounded at the apex, keels shortly cucullate, long cristate on the back, incrassate, bisaccate. Ovary glabrous shortly stipitate, disk broadly annular. Styles dilate at the apex, appendiculate under the stigma. Capsules 5 mm. broad, 4 mm. long, membranaceous, compressedly obreniformed or broadly orbicular, emarginate, loculicidal on the margin. Seeds ovoid, 2 mm. long, pendulous, pilose, strophiolate, strophioles 1.2 mm. long on each side.

HAB. Taichū, Kashigatani.

Somewhat resembles *P. Wattersii* HANCE in Journ. Bot. (1881) p. 209; but differs from it in having ob-reniformed fruits, much smaller flowers, divided crests, and in many other points.

**Polygala Tatarinowii** REG.; FRANCHET Pl. David. p. 45; FORBES et HEMSL. Ind. Fl. Sin. I. p. 62; MATSUM. et HAYATA Enum. Pl. Formos. p. 34.

HAB. Giran, Horisha.

DISTRIB. Northern China and Japan.

**Polygala japonica** HOUTT.; DC. Prodr. I. p. 324; BAKER et S. MOORE in Journ. Linn. Soc. XVII. p. 379; FRANCHET Pl. David. p. 45; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 45; HENRY List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 311; PALIBIN Conspect. Fl. Koreae I. p. 37; MATSUM. et HAYATA Enum. Pl. Formos. p. 34; HAYATA Fl. Mont. Formos. p. 55.

*Polygala sibirica* LINN. Sp. Pl. ed-2 p. 987; DC. Prodr. I. p. 324; A. W. BENN in Journ. Bot. (1878) p. 277; HANCE in "Journ Bot. (1882) p. 257"; FORBES et HEMSL. Ind. Fl. Sin. I. p. 61.



HAB. MORRISON.

DISTRIB. From Siberia to Japan and India, and occurs also in Australia.

**Polygala glomerata** LOUR. Fl. Cochinch. ed-WILLD. p. 518; DC. Prodr. I. p. 326; BENTH. Fl. Hongk. p. 44; A. W. Benn in HOOK. f. Fl. Brit. Ind. I. p. 206; FORBES et HEMSLE. Ind. Fl. Sin. I. p. 60; HENRY List Pl. Formos. p. 18; MATSUM. et HAYATA Enum. Pl. Formos. p. 34.

HAB. Biōritsu, Akō.

DISTRIB. From the western Himalayas through the Malay peninsula to southern China.

## Caryophyllææ.

### *Conspectus of the Formosan Genera.*

- (1) Calyx gamosepalous, 4-5-lobed. (2)  
     Sepals free or connate at the base only. (4)
- (2) Hilum facial; embryo straight.....*Dianthus*. 1  
     Hilum lateral; embryo annular. (3)
- (3) Capsules bursting by valves. ....*Silene*. 2  
     Fruits fleshy. .... *Cucubalus*. 3
- (4) Styles free. (5)  
     Styles combined ..... *Drymaria*. 4
- (5) Petals entire, stamens and styles opposite the sepals.....*Sagina*. 5  
     Petals notched or 2-fid (6)
- (6) Capsules cylindric or conic. Petals notched .....*Cerastium*. 6  
     Capsules globose, ovoid or oblong. Petals bi-fid .....*Stellaria*. 7

### 1. *Dianthus* LINN.

**Dianthus superbus** LINN. Sp. Pl. ed-2, p. 589; DC. Prodr. I. p. 365; HANCE in Journ. Bot. (1883) p. 296; FRANCHET Pl. David. p. 46; LEDEB. Fl. Ross. I. p. 533; MAXIM. Prim. Fl. Amur. p. 52; REGEL Pl. Radd. I. p. 288; MIQ. Prol. Fl. Jap. p. 9; SCHMIDT Reis. Amur. p. 116; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 64; DIELS Fl. Centr. Chin. p. 316; PALIBIN Conspect. Fl. Koreæ I. p. 39; MATSUM. et HAYATA Enum. Pl. Formos. p. 35; HAYATA Fl. Mont. Formos. p. 55.



HAB. Ganzan, Suizan, the central mountains; Taitō: Tairon-kōsha; Toroku: Gunkei; Nantō: Hinokiyama.

DISTRIB. Europe to Mongolia; China throughout, Saghalien and Japan.

**Dianthus** sp. HAYATA Fl. Mont. Formos. p. 56.

HAB. Mt. Morrison.

This differs from *D. superbus* LINN. in having elongate bracts, and especially in two inferior ones.

## 2. *Silene* LINN.

**Silene Fortunei** VIS. in Linnæa XXIV. p. 181, et XXXVI. p. 688; FRANCHET Pl. David. p. 47; FORBES et HEMSL. Ind. Fl. Sin. I. p. 65; HENRY List Pl. Formos. p. 19; DIELS Fl. Centr. Chin. p. 318; Bot. Mag. t. 7649; MATSUM. et HAYATA Enum. Pl. Formos. p. 35; HAYATA Fl. Mont. Formos. p. 56

HAB. In lowlands as well as in highlands; Mt. Morrison, Tamsui, Taihoku.

DISTRIB. Central and southern China.

The plant found in the high regions is very like the specimen collected on the sea-shore. Excepting that the flowers of the former is almost as half as those of the latter, I can find no distinction whatever between the two.

## 3. *Cucubalus* Linn.

**Cucubalus baccifer** LINN. Sp. Pl. ed-2, p. 591; DC. Prodr. I. p. 367; LEDEB. Fl. Ross. I. p. 332; MAXIM. Prim. Fl. Amur. p. 56; REGEL Pl. Radd. p. 333; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 48; KOMAROV Fl. Manshuriae, II. p. 205; DIELS Fl. Centr. Chin. p. 319; HAYATA Fl. Mont. Formos. p. 57.

HAB. Mt. Morrison, at the height of 13000 ft.; Rakunakusha.

DISTRIB. The Himalayas, China throughout, eastward to Japan as far as North America, westward to Europe.



4. *Drymaria* WILLD.

*Drymaria cordata* WILLD.; DC. Prodr. I. p. 395; BENTH. Fl. Hongk. p. 22; EDGEWORTH et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 244; FORBES et HEMSL. Ind. Fl. Sin. I. p. 71; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 317; MATSUM. et HAYATA Enum. Pl. Formos. p. 37.

*Cerastium cordifolium* ROXB. Fl. Ind. II. p. 458.

HAB. Taiko, Pachina, Heirinbi, Giran, Kôtô, Maruyama, Tamsui.

DISTRIB. Throughout tropical regions.

5. *Sagina* LINN.

*Sagina Linnæi* FRESL.; MAXIM. in Mél. Biol. IX. p. 32; FENZL. in REDEB. Fl. Ross. I. p. 339; REGEL. Pl. Radd. I. p. 424; SCHMIDT Reis. in Amur. p. 117; FORBES et HEMSL. Ind. Fl. Sin. I. p. 70; DIELS Fl. Centr. Chin. p. 321; var. *maxima* MAXIM. in Mél. Biol. IX. (1873) p. 33; FRANCHET Pl. David. I. p. 50; ITÔ et MATSUM. Tent. Fl. Lutch. p. 316; MATSUM. et HAYATA Enum. Pl. Formos. p. 37.

*Sagina sinensis* HANCE in Journ. Bot. (1868) p. 46.

*Sagina maxima* A. GRAY Bot. Jap. p. 382; WALP. Ann. VII. p. 309; MIQ. Prol. Fl. Jap. p. 11; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 53.

*Sagina procumbens* THUNB. Fl. Jap. p. 80, (non LINN.).

HAB. Tamsui.

DISTRIB. Widely dispersed in temperate regions of the northern hemisphere.

6. *Cerastium*.

*Dichotomous Key to the Formosan Species.*

Leaves rotundately deltoid ..... *Cerastium arisanense*.

Leaves lanceolate ..... *Cerastium trigynum* var. *morrisonense*.

*Cerastium arisanense* HAYATA (Pl. XIII.) Materials for a Flora of



Formosa p. 35. Herb prostrate, very small; stems slender sparingly hirsute. Leaves opposite, petiolate, smaller, broadly rhomboid, 5-6 mm. long, 7 mm. broad, obtuse and aristate at the apex broadly truncate and shortly attenuate at the base, margin upwards ciliate, glabrous below (except costa), petioles 6 mm. long, complanate. Flowers nearly 9 mm. long, solitary at the axils of the leaves, long pedunculate, peduncles nearly 5 cm. long, hirsute. Sepals 5, lanceolate, 7 mm. long, 2 mm. broad, scaly, tri-nerved, acuminate at the apex, sparingly hirsute on the back and at the apex. Petals 5, obovately spathulate, 12 mm. long,  $4\frac{1}{2}$  mm. broad, 2-lobate at the apex, (lobes apex rounded,  $2\frac{1}{2}$  mm. long, 2 mm. broad, sinus obtuse), attenuately cuneate, clawed. Stamens 10. Ovary ovoid, 2 mm. long, apex truncate, slightly elevate. Styles 3, erect or recurved, 3 mm. long.

HAB. Arizan.

**Cerastium trigynum** VILL. var. **morrisonense** HAYATA Materials for a Flora of Formos. p. 36. Herb diffused or caespitose, glandulously pubescent, at last glabrous. Leaves often remote, sometimes approximate linear-lanceolate or spathulate-acuminate, base sometimes attenuate, dilated, half-embracing the stem, apex callosio-acute or aristately acute, 1-2 cm. long, 2- $2\frac{1}{2}$  mm. broad. Cymes terminal, some 1-flowered, some tri-flowered, bracteate, bracts scaly, pedicels 2- $1\frac{1}{2}$  cm. long, glandulously pubescent. Sepals 5, lanceolate  $7\frac{1}{2}$  mm. long, margin scaly, outside glanduloso-pubescent, inside glabrous. Petals 5, oblanceolate, 13 mm. long, 2-lobed at the apex, (lobes oblong, obtuse, 6 mm. long), narrowed at the base. Stamens 10, filaments as half long as petals. 2-glanduliferous at the base of the filaments which are opposite the sepals. Ovary ovoid, 2 mm. long, 1-celled, many-ovuled. Styles 5, opposite the sepals, longer than ovary, 3 mm. long. Capsules cylindraceous 7 mm. long,  $2\frac{1}{2}$  mm. broad, erect, dehiscent in 10-teeth at the apex, teeth obtuse, truncate. Seeds sub reniformed and globose, 1 mm. long, laterally more or less compressed rugose on the back.

*Cerastium morrisonense* HAYATA Fl. Mont. Formos. p. 57.

HAB. Mt. Morrison.



This is quite near *C. trigynum* VILL. from which it is distinguishable only in having much narrower petals. It should better be regarded as a variety of the same species.

CERASTIUM PILOSUM LEDEB.; HAYATA Fl. Mont. Formos. p. 58.

The occurrence of the species in the island is rather doubtful.

## 7. *Stellaria* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Leaves oblongo-lanceolate, nearly sessile. (2)  
 Leaves ovate, ovato-oblong or cordate, narrowed at the base to the petioles.  
 (3)
- (2) Leaves densely villosa-stellato-pilose ..... *Stellaria stellato-pilosa*.  
 Leaves glabrous ..... *S. uliginosa*.
- (3) Leaves and flowers very much smaller, flowers 2 mm. long. . . . *S. micrantha*.  
 Leaves much larger, flowers 7 mm. long ..... *S. aquatica*.

**Setellaria stellato-pilosa** HAYATA Fl. Mont. Formos. p. 58, and Materials for a Flora of Formosa p. 37. Diffused herb, branched, densely stellately pilose. Leaves sessile, ovately lanceolate, base cordate, aristately acuminate at the apex, 12 mm. long, 3 mm. broad, rarely ovately-cordate, densely beset with stellate hairs above, with longer hairs beneath, costas prominent. Flowers 3-4, in a terminal cyme or rarely axillary, pedicellate, pedicels nearly 1 cm. long, bracteate at the base of the pedicels, bracts 2 opposite ovately lanceolate. Sepals 5, lanceolate, densely stellately pilose outside, at last glabrous,  $3\frac{1}{2}$  mm. long, 1 mm. broad. Petals profoundly 2-fid, lobes lanceolate, obtuse, longer than sepals. Stamens 10. Disk between stamens, glandulose. Ovary 1-celled, few-ovuled. Styles 3. Capsules oblong-ovoid, 4 mm. long, dehiscent in 3-valves, valves 2-fid. Seeds globose reniformed laterally compressed, 1 mm. in diameter, rugosely muricate.

HAB. Mt. Morrison.

This is very near *Stellaria nutans* HEMS. in Journ. Linn. Soc. XXXIV. p. 434, (Tibet Oriental: Tatsin-Lou); but differs from it by its larger and broader leaves, and also in having rough velvety hairs all over the plant.



It is also near *S. dichasioides* WILLIAMS in the same volume of the same journal p. 436, from which it differs in having more hairy leaves. Besides, it comes very near *S. saxatilis* HAM. from which it is hardly distinguishable. All the plants above mentioned are very similar in every respect, and further study will prove that they are one and the same species, though some of them should be regarded as representing a variety of another.

***Stellaria uliginosa*** MURRAY; BENTH. Fl. Hongk. p. 22; FENZL in LEDEB. Fl. Ross. I. p. 393; REGEL Pl. Radd. I. pp. 383 et 400; MAXIM. Mém. Biol. IX. (1873) p. 49; MIQ. Prol. Fl. Jap. p. 11; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 51; EDGEWORTH et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 233; FORBES et HEMSL. Ind. Fl. Sin. I. p. 69; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 315; DIELS Fl. Centr. Chin. p. 320; MATSUM. et HAYATA Enum. Pl. Formos. p. 36.

*Stellaria aquatica* POLL.; DC. Prodr. I. p. 398; "LEDEB. Fl. Alt. II. p. 156."

*Stellaria undulata* THUNB. Fl. Jap. p. 185; SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 166.

*Larbreæ aquatica* ST. HIL.; DC. Prodr. III. p. 366.

*Larbreæ uliginosa* HOOK. f. in Journ. Linn. Soc. I. p. 116.

HAB. Exact localities are not given to our specimens.

DISTRIB. Europe, Siberia, Japan, China, Himalaya, southern Africa, northern America.

***Stellaria micrantha*** HAYATA (Pl. XIV.) Materials for a Flora of Formosa p. 36. Herb, prostrate at the base, ascending towards the apex. Leaves opposite, sessile, 15 mm. distant, broadly ovate, 9 mm. long, 6 mm. broad, aristate, acute at the apex, base abruptly attenuate or rounded (in upper leaves), more or less embracing the stem. Cymes terminal or axillary, 5 cm. long, 4 cm. broad, branches opposite, bracts minute, ovate, acute, 1 mm. long. Sepals 5 ovately oblong, 2 mm. long, acute, squamose. Petals 5, minute, profoundly bi-fid, (lobes lanceolate 1 mm. long, sinus acute) basal parts narrowed. Stamens 5. Styles 3, minute. Capsules ovoid, valvately dehiscent beyond half-



way down to the base, valves entire Seeds compressedly globose, shortly beaked at the apex, recurved, face arcuately reticulate.

HAB. Arizan.

Near *Stellaria media* LINN. but differs from it in having extremely small flowers.

***Stellaria aquatica*** SCOP.; BENTH. Fl. Hongk. p. 21; BAKER et S. MOORE in Journ. Linn. Soc. XVII. p. 380; FORBES et HEMSL. Ind. Fl. Sin. I. p. 67; DIELS Fl. Centr. Chin. p. 319; MATSUM. et HAYATA Enum. Pl. Formos. p. 36.

*Cerastium aquaticum* LINN. Sp. Pl. ed-2 p. 629.

*Larbrea aquatica* SER in DC. Prodr. I. p. 395.

*Myosoton aquaticum* MENCH.; FRANCIET Pl. David. p. 53.

HAB. Shintiku, Taihoku.

DISTRIB. Widely diffused in temperate regions.

## Portulacæ.

### *Conspectus of the Formosan Genera.*

- |  |                      |
|--|----------------------|
| (1) Ovary half-adnate to the calyx. .... | <i>Portulaca</i> . 1 |
| Ovary free. ....                         | <i>Talinum</i> . 2   |

### 1. *Portulaca* LINN.

#### *Dichotomous Key to the Formosan Species.*

- |  |                              |
|--|------------------------------|
| (1) Leaves lanceolate. ....                            | <i>Portulaca pilosa</i> var. |
| Leaves obovate or obovately spatulate (2).             |                              |
| (2) Distinctly pilose at the axils of the leaves. .... | <i>P. quadrifida</i> var.    |
|  | <i>formosana</i> .           |
| Not at all pilose at the axils of the leaves. ....     | <i>P. cleracea</i> .         |

***Portulaca pilosa*** LINN. var. MATSUM. et HAYATA Enum. Pl. Formos. p. 38.

HAB. Taihoku.

DISTRIB.



**Portulaca quadrifida** LINN. var. **formosana** HAYATA Materials for a Flora of Formosa p. 37. Herb fleshy, prostrate, stem incrassate, base 5 mm. in diameter, many-branched at the upper portion. Leaves alternate, fleshy, obovate, rounded at the apex, slightly narrowed to the base, 6–7 mm. long,  $3\frac{1}{2}$  mm. broad, pilose at the axils, hairs patent 2 mm. long. Flowers solitary at the apex of the branchlets with 5-involucral leaves. Capsules membranaceous  $2\frac{1}{2}$  mm. in diameter. Seeds subglobose,  $\frac{1}{2}$  mm. in diameter, laterally compressed, muricate.

*Portulaca quadrifida* HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 39 (non LINN.).

HAB. Kōtōshō, Coll. K. MIYAKE, Nov. 1899.

Very near the type, from which it is distinguishable by its far less hairy form.

**Portulaca oleracea** LINN. Sp. Pl. ed-2 p. 638; DC. Prodr. III. p. 353; BENTH. Fl. Hongk. p. 127; THUNB. Fl. Jap. p. 192; LOUR. Fl. Cochinch. ed-WILLD. p. 359; WALP. Ann. II. p. 261; ROXB. Fl. Ind. II. p. 462; SIEB. et ZUCC. Fl. Jap. Fam. Nat. IV. pt.-2, p. 166; LEDEB. Fl. Ross. II. p. 145; BENTH. Fl. Austral. I. p. 169; MAXIM. Prim. Fl. Amur. p. 113; MIQ. Prol. Fl. Jap. p. 375; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 53; DYER in HOOK. f. Fl. Brit. Ind. I. p. 246; FORBES et HEMSL. Ind. Fl. Sin. I. p. 71; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 317; PALIBIN Conspect. Fl. Koreæ I. p. 44; MATSUM. et HAYATA Enum. Pl. Formos. p. 38.

HAB. Taihoku, Takow.

DISTRIB. in tropical and temperate regions of the world.

## 2. *Talinum* ADANS.

**Talinum crassifolium** WILLD. Sp. Pl. II. p. 862; MATSUM. et HAYATA Enum. Pl. Formos. p. 39.

HAB. Pachina, Taichū.

DISTRIB. Introduced from tropical America.



## Tamariscineæ.

*Tamarix* LINN.

**Tamarix juniperina** BUNGE; WALP. Rep. II. p. 117; FORBES et  
HEMSL. Ind. Fl. Sin. I. p. 347; MATSUM. et HAYATA Enum. Pl. Formos. p. 39.

*Tamarix chinensis* SIEB. et ZUCC. Fl. Jap. I. p. 132, t. 71.

HAB. Taihoku.

DISTRIB. Asia, Europe, Africa and Australia.

## Elatineæ.

*Conspectus of the Formosan Genera.*

- (1) Sepals obtuse, aquatic herbs ..... *Elatine*. 1  
 Sepals acute, flowers usually 5-merous ..... *Bergia*. 2

1. *Elatine* LINN.

**Elatine triandra** SCHKUHR, "Handb. I. p. 345, t. 119, b, f. 2;" DC.  
Prodr. I. p. 390; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 54; MATSUM.  
et HAYATA Enum. Pl. Formos. p. 39.

HAB. Pachina, Kelung, Maruyama.

DISTRIB. Europe.

2. *Bergia* LINN.

**Bergia glandulosa** TURCZ. "in Bull. Soc. Nat. Mosc. XXVII. (1854)-2.  
p. 371"; HENRY List Pl. Formos. p. 19; MATSUM. et HAYATA Enum. Pl.  
Formos. p. 40.

HAB. Kisaijurokushō, Takow, Garanbi.

DISTRIB. Luzon.

## Hypericineæ.

*Hypericum* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Shrubs. (2)

Herbs or undershrubs, less than 40 cm. high. (10)



- (2) Flowers axillary or terminal, always geminate. *Hypericum geminiflorum*.  
Flowers axillary or terminal usually solitary. (3)
- (3) Styles distinct. .... *H. Ascyron*.  
Styles connate from the base to the apex. (4)
- (4) Stem or branches distinctly tetragonous, distinctly winged  
along the edge. .... *H. subalatum*.  
Stem or branches terete or subterete, obscurely winged. (5)
- (5) Leaves not distinctly 3-nerved. (6)  
Leaves distinctly 3-nerved. (9)
- (6) Leaves and flowers comparatively small, sepals 1 or  $1\frac{1}{2}$  mm. long.  
*H. acutisepalum*.  
Leaves and flowers comparatively large, sepals more than 3 mm.  
long. (7)
- (7) Leaves not at all dotted. .... *H. chinense*.  
Leaves minutely dotted. (8)
- (8) Leaves oblong more or less cuneate at the base. Sepals  
lanceolate, acute. .... *H. patulum*.  
Leaves oblong, obtuse at both ends, sepals ovate. .... *H. formosanum*.
- (9) Leaves oblong or lanceolate, capsules subcylindrical. .... *H. trinervium*.  
Leaves lanceolate, capsules oblong. .... *H. simplicistylum*.
- (10) Leaves, opposite, connate at the base. .... *H. Sampsoni*.  
Leaves opposite, not connate. (11)
- (11) Leaves oblong, obtuse, comparatively large,  $2\frac{1}{2}$  cm. long. ... *H. taisanense*.  
Leaves smaller 1 cm. long. (12)
- (12) Leaves linear. .... *H. randaiense*.  
Leaves ovate, oblong. (13)
- (13) Flowers larger, 1 cm. or  $1\frac{1}{2}$  cm. long. .... *H. Nagasawai*.  
Flowers smaller,  $\frac{1}{2}$  cm.  $\frac{2}{3}$  cm. long. .... *H. japonicum*.

**Hypericum geminiflorum** HEMSLEY in Ann. Bot. IX. p. 144 ;  
HENRY List Fl. Formos. p. 19 ; MATSUM. et HAYATA Enum. Pl. Formos.  
p. 41.

HAB. AKŌ.



DISTRIB. An endemic plant.

**Hypericum Aseyron** LINN. Sp. Pl. ed-2, p. 783; DC. Prodr. I. p. 545; HANCE in Journ. Bot. (1880) p. 259; MAXIM. in Mél. Biol. XI. p. 162; FRANCHET Pl. DAVID. p. 55; FORBES et HEMSL. Ind. Fl. Sin. I. p. 72; DIELS Fl. Centr. Chin. p. 476; PALIBIN Conspect. Fl. Koreae I. p. 44; MATSUM. et HAYATA Enum. Pl. Formos. p. 40.

HAB. Sekihishō.

DISTRIB. Eastern Siberia, China, Mongolia, Korea, North America.

**Hypericum subalatum** HAYATA Materials for a Flora of Formosa p. 41. Branches smooth, tetragonous, subalate, wings 1 mm. broad. Leaves opposite, oblongly-lanceolate, 6 cm. long, 13 mm. broad, obtuse or shortly mucronate at the apex, gradually narrowed, sessile, dotted. Flowers solitary at the apex of the axillary branches, pedunculate, bracts often 2-3 cm. long, leaf-like but smaller, perulate at the base, perules scaly, lanceolate, 2 mm. long. Sepals 5, oblong, 7 mm. long, 3 mm. broad, obtusely acute. Petals 5, strongly oblique. Ovary ovoid, 5-sulcate, styles connate.

*Hypericum formosanum* HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 41, pro parte, (non MIXIM.)

HAB. Kussaku.

The present plant differs from *H. formosanum* MAXIM. by much longer leaves. The leaves of the other species are always oblong and shorter than those of this plant.

**Hypericum acutisepalum** HAYATA (Pl. XV.) Materials for a Flora of Formosa p. 38. Branches slender, barks reddish, branchlets alternate or opposite. Leaves opposite, oblong or elongately oblong, obtusely mucronate, shortly attenuate at the base, sessile, 3-4 cm. long, 12 mm. broad, dotted with black points, more pallid beneath, primary lateral veins 5-7, inconspicuous, more or less arcuate. Flowers clustered at the axils of the leaves, pedicellate, pedicels 1 cm. long, perulate at the base, perules 2-3-seriate, subulate, or lanceolate, 1 mm. long. Sepals 5, unequal, oblong, acute, 1½ mm. long. Petals 5, unequal, oblique, obovate, 12 mm. long, 7 mm. broad,



truncately rounded at the base, cuneately angustate at the base, oblique. Stamens pentadelphous. Ovary ovoid, 4 mm. long, gradually reaching the style. Styles completely connate, 7 mm. long, obscurely 5-lobate at the apex, stigmatic.

HAB. Nantō, by T. KAWAKAMI, July, 1907, (No. 3245).

Near *H. simplicistyla* HAYATA; but differs from it in having much smaller and acute sepals.

**Hypericum chinense** LINN.; DC. Prodr. I. p. 545; HANCE in Journ. Bot. (1879) p. 8; MAXIM. in Mél. Biol. XI. p. 159; FORBES et HEMSL. Ind. Fl. Sin. I. p. 72; HENRY List Pl. Formos. p. 19; DIELS Fl. Centr. Chin. p. 475; MATSUM. et HAYATA Enum. Pl. Formos. p. 40.

*Hypericum monogynum* LINN. Sp. Pl. ed-2, p. 1107; THUNB. Fl. Jap. p. 297; Bot. Mag. t. 334.

*Hypericum salicifolium* SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 162.

*Hypericum aureum* LOUR. Fl. Cochinch. ed-WILLD. p. 578.

*Norysca aurea* BLUME in Mus. Bot. Lugd.-Bat. II. p. 23.

*Hypericum chinensis* β. HOOK. et ARN. Bot. Beech. Voy. p. 172.

HAB. Pachina, Tamsui.

DISTRIB. Japan and China.

**Hypericum japonicum** THUNB. Fl. Jap. p. 295, t. 31; DC. Prodr. I. p. 548; BENTH. Fl. Hongk. p. 23; HANCE in Journ. Bot. (1874) p. 259; FRANCHET Pl. David. p. 56; SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 163; MIQ. Prol. Fl. Jap. p. 147; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 56; DYER in HOOK. f. Fl. Brit. Ind. I. p. 256; FORBES et HEMSL. Ind. Fl. Sin. I. p. 73; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 320; DIELS Fl. Centr. Chin. p. 476; MATSUM. et HAYATA Enum. Pl. Formos. p. 41

*Hypericum mutilum* MAXIM. in Mél. Biol. XI. p. 171, (pro part.).

*Hypericum nervatum* HANCE in WALP. Ann. II. p. 188.

*Hypericum pusillum* CHOISY in DC. Prodr. I. p. 549.

*Hypericum Thunbergii* FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 300.

*Brathys japonica et laxa* BLUME in Mus. Bot. Lugd.-Bat. II. p. 19.



*Brathys nepalensis* BLUME Mus. Bot. Lugd.—Bat. II. p. 19.

HAB. Kelung, Taihoku, Kussaku, Bioritsu, Tamsui, Takow, Mankinshō.

DISTRIB. Japan, Hongkong, China, Malaya, Himalaya, Australia, New Zealand.

**Hypericum patulum** THUNB. Fl. Jap. p. 295, et Ic. Pl. Jap. t. 17; DYER in HOOK. f. Fl. Brit. Ind. I. p. 254; DC. Prodr. I. p. 545; MAXIM. in Mél. Biol. XI. p. 161; HANCE in Journ. Bot. (1878) p. 104; Bot. Mag. t. 5693; SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 161; MIQ. Prol. Fl. Jap. p. 147; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 53; FORBES et HEMSL. Ind. Fl. Sin. I. p. 73; DIELS Fl. Centr. Chin. p. 476; MATSUM. et HAYATA Enum. Pl. Formos. p. 42.

*Hypericum uralum* HAM.; Bot. Mag. t. 2375.

*Norysca patula* BLUME Mus. Bot. Lugd.—Bat. II. p. 23.

HAB. Kelung.

DISTRIB. Himalaya, Burma, western and central China.

**Hypericum formosanum** MAXIM. in Mél. Biol. XI. p. 160; FORBES et HEMSL. Ind. Fl. Sin. I. p. 73; HENRY List Pl. Formos. p. 19; MATSUM. et HAYATA Enum. Pl. Formos. p. 41.

HAB. Shinkōchō, Shintengai, Tamsui.

DISTRIB. An endemic plant.

**Hypericum trinervium** HEMSLEY in Ann. Bot. IX. p. 144; HENRY List Pl. Formos. p. 19; MATSUM. et HAYATA Enum. Pl. Formos. p. 43.

HAB. South Cape.

DISTRIB. An endemic plant.

**Hypericum simplicistylum** HAYATA (Pl. XVI) Materials for a Flora of Formosa p. 40. Branches slender, barks solute, rubescent, branchlets opposite, very much slender. Leaves opposite, chartaceous, subsessile, lanceolately oblong, nearly 4 cm. long, 8 mm. broad, acute at the apex or obtuse, calloso-mucronate, slightly cuneate at the base, more pallid beneath, costa impressed above, primary basal veins 2, arcuate, reaching the apex of the leaves, primary lateral veins (except basal ones) 5–7, divaricate, inconspicuous.



Flowers axillary, solitary, opposite, pedunculate, (peduncles 1 cm. long), 2-4-bracteate, bracts opposite, very like leaves, but smaller, 8 mm. long, base perulate, perules scaly, acute, 1-2 mm. long. Sepals 3 mm. long, oblong, obtuse or rounded at the apex. Petals 5, very unequal, obliquely oblong, rounded at the apex. Stamens pentadelphous, shorter than petals. Ovary 4 mm. long, ovoid, obtuse at the apex, 5-celled. Styles entirely connate, stigma subglobose, slightly 5-lobed. Capsules elongately ovoid, 8 mm. long, 3½ mm. broad, styles 5 mm. long, simple, persistent. Seeds numerous, clavately cylindrical, 1 mm. long, winged on one side, wing slightly produced on both ends.

HAB. Nōkōsan, at the height of 6000 ft. Coll. T. KAWAKAMI and U. MORI, June, 1908, (No. 4507).

Near *H. longistylum* OLIV.; but differs from it in the apex of the style, and in having smaller flowers, and acute, elongate leaves. Also near *H. trinervium* HEMS. from which it is distinguishable by the ovate capsules and elongately oblong leaves.

**Hypericum Sampsoni** HANCE in Journ. Bot. (1895) p. 378, et (1870) p. 275; HEMS. in Journ. Bot. (1876) p. 207; DYER in HOOK. f. Fl. Brit. Ind. I. p. 255; MAXIM. in Mém. Biol. XI. p. 165; FORBES et HEMS. Ind. Fl. Sin. I. p. 74; HENRY List Pl. Formos. p. 19; DIELS Fl. Centr. Chin. p. 476; MATSUM. et HAYATA Enum. Pl. Formos. p. 43.

*Hypericum electrocarpum* MAXIM. "in Bull. Acad. Pétersb. XII. p. 60."

HAB. Tamsui, Taihoku.

DISTRIB. Khasia, Assam, Birma, Japan, eastern and southern China.

**Hypericum taisanense** HAYATA Materials for a Flora of Formosa p. 41. Shrubby, stems erect or ascendent, terete, pubescent, simple, not branched, 30-40 cm. high, leafy at the upper portions, quite leafless at the lower portions. Leaves opposite, elongately ovate, sessile, obtuse at the apex, cordate at the base, punctate on the blade and the margin towards the apex, chartaceous, costae and primary veins impressed above, elevated beneath. Cymes terminal, 2-4 cm. long, 3-4 cm. broad, bracts shorter. Sepals 5, connate at the base, ovately lanceolate, obtuse or acute, 2½ mm. long,



punctate, points blackish purple. Petals 5, elongately obovate, 7 mm. long,  $2\frac{1}{2}$  mm. broad, roundedly truncate at the apex, sometimes slightly emarginate, cuneately narrowed at the base, punctately maculate from the middle upwards, points linear or orbicular, blackish purple. Stamens 25-30, connate at the base, filaments filiformed 4-5 mm. long, anthers broadly orbicular emarginate at both ends,  $\frac{1}{4}$  mm. long, maculate on the back at the apex, spots orbicular. Ovary oblongly ovoid 3 mm. long,  $1\frac{1}{2}$  mm. broad, 3-sulcate. Styles 3, distinct, 3 mm. long. Capsules elongately ovoid, 1 cm. long, 4 mm. broad, crowned with persistent styles. Seeds numerous shortly cylindrical,  $\frac{2}{3}$  mm. long,  $\frac{1}{3}$  mm. broad, obscurely mucronate on both ends, elegantly muricate under microscope.

HAB. Taisan, coll. T. KAWAKAMI.

Near *Hypericum erectum* THUNB.; but differs from it in having elongated, ovate leaves.

**Hypericum randaiense** HAYATA (Pl. XVII.) Materials for a Flora of Formosa p. 39. Shrubby small, procumbent at the base, but ascendent towards the apex, stems slender tetragonous, prominent at the angles, glabrous, rubescent. Leaves opposite, sessile, linear, or linear-lanceolate truncate at the apex, or shortly mucronate, 13 mm. long,  $2\frac{1}{2}$  mm. broad, slightly punctate on the margin, or not punctate, but dotted with pelucid dots. Cymes 3-5-flowered, or reduced to one flower, pedicels 1-2 cm. long. Sepals 5, linear-narrowed,  $5\frac{1}{2}$  mm. long,  $1\frac{1}{4}$  mm. broad, obtuse, dotted with 2 or 3 black points on the margin, but dotted with a few pelucid dots on the blades or not at all punctate. Petals 5, strongly oblique obovate, rounded at the apex, obliquely cuneately acute at the base, 9 mm. long, 5 mm. broad. Stamens numerous, filaments 6-7 mm. long, anthers broad orbicular,  $\frac{1}{2}$  mm. broad, emarginate on both sides, maculate on the back on the apex. Ovary ovoid, 3-sulcate,  $2\frac{1}{2}$  mm. long, styles 3, distinct,  $5\frac{1}{2}$  mm. long.

HAB. Randaizan, coll. U. MORI and B. HAYATA, Aug. 1908, (No. 7108).

This is very near *H. perforatum* but differs from it in having much obtuse sepals.

**Hypericum Nagasawai** HAYATA (Pl. XVIII.) Materials for a Flora of



Formosa p. 38. Stems slender, base shrubby, 7 cm. high,  $\frac{1}{3}$  -  $\frac{1}{2}$  mm. in diameter, glabrous, tetragonous, acute at the angles. Leaves opposite, sessile, oblong, or elongately oblong, rounded at the apex or obtuse, shortly mucronate, shortly attenuate at the base, 1- $\frac{1}{2}$  cm. long, 5-6 mm. broad, 1-seriately dotted with black points on the margin, and also dotted with pelucid points on the blades. Flowers solitary at the apex of the branches, pedicellate, pedicels 6 mm. long. Sepals 5, elongately oblong, 6 mm. long, 2 mm. broad, rounded at the apex, or slightly emarginate, margin slightly reflexed and dotted with black points, but dotted with pelucid points on the blades. Petals 5, obovately oblong, oblique, 12 mm. long, 4 $\frac{1}{2}$  mm. broad, truncate rounded at the apex, gradually narrowed downwards, thicker on one side, thinner on the other. Stamens numerous, filaments thread-like, anthers nearly orbicular,  $\frac{1}{2}$  mm. long, emarginate on both sides, with a dot on the apex, dots orbicular, blackish purple. Ovary oblong-ovoid, 5 mm. long, 2 $\frac{1}{2}$  mm. in diameter, 3-sulcate. Styles 3, distinct, 6 mm. long.

HAB. Mt. Morrison, at the height of 13094 ft., 1905, Nov., (No. 754).

In my paper above cited, I mention that the present plant is referable to *Hypericum attenuatum* CHOIS., although there have been some doubts about its being identical with CHOISY's plant. While studying here at Kew, I have compared the plant with the type of the species and found that they are so very different that it hardly needs pointing out. The Formosan plant comes very near *H. perforatum*; but differs from it in having obtuse or even rounded sepals. *H. perforatum* has usually very acute sepals.

## Guttiferæ.

### *Conspectus of the Formosan Genera.*

Flowers polygamous. Sepals 4, decussate, petals 4, imbricate.

Ovary 2-12-celled Berries corticose. .... *Garcinia* 1.

Flowers polygamous. Sepals with petals 4-12, 2-3 seriately

imbricate. Ovary 1-celled. Drupes indehiscent ..... *Calophyllum* 2.



1. *Garcinia* LINN.

***Garcinia multiflora*** CHAMP. in BENTH. Fl. Hongk. p. 25; FORBES et HEMSL. Ind. Fl. Sin. I. p. 75; HENRY List Pl. Formos. p. 19; MATSUM. et HAYATA Enum. Pl. Formos. p. 43.

HAB. Mankinshō, South Cape.

DISTRIB. Hongkong.

2. *Calophyllum* LINN.

***Calophyllum Inophyllum*** LINN. Sp. Pl. ed-2, p. 732; DC. Prodr. I. p. 562; HANCE in Journ. Bot. (1879) p. 8; ROXB. Fl. Ind. II. p. 606; WIGHT Ic. Pl. Ind. Or t. 77; HOOK. et ARN. Bot. Beech. Voy. pp. 60 et 260; BENTH. Fl. Austral. I. p. 183; MAXIM. in Mém. Biol. XII. p. 421; ANDERSON in HOOK. f. Fl. Brit. Ind. I. p. 273; FORBES et HEMSL. Ind. Fl. Sin. I. p. 75; VESQUE in DC. Monog. Phanerog. VIII. p. 544; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 323; MATSUM. et HAYATA Enum. Pl. Formos. p. 44.

HAB. Kōshūn, Garanbi, Kelung.

DISTRIB. Asia, East Asia, Malaya, Australia, Polynesia.

## Ternstroemiaceæ.

*Conspectus of the Formosan Genera.*

- (1) Peduncles 1-flowered (2)  
Peduncles many-flowered (6)
- (2) Anthers basifixed (3)  
Anthers versatile (8)
- (3) Flowers hermaphrodite (4)  
Flowers dioecious.....*Eurya*. 4
- (4) Anthers glabrous. .... *Ternstroemia*. 1  
Anthers pilose (5)
- (5) Seeds numerous, ovary 3-5-celled. .... *Adinandra*. 2  
Seeds not very many, ovary 2-3-celled. .... *Cleyera*. 3



- (6) Flowers 5-merous, stamens many. (7)  
 Flowers 4-merous, stamens a few. .... *Stachyurus*. 7
- (7) Styles many.....*Actinidia*. 5  
 Styles 3-5. .... *Saurauja*. 6
- (8) Seeds winged (9).  
 Seeds not winged. .... *Thea*. 10
- (9) Capsules quite globose. Radicle inferior..... *Schima*. 9  
 Capsules elongate, cylindrical. Radicle superior. .... *Gordonia*. 8

### 1. *Ternstræmia* LINN.

***Ternstræmia japonica*** THUNB. in Journ. Linn. Soc. II. p. 335; SIEB. et ZUCC. Fl. Jap. p. 148, t. 80; BENTH. Fl. Hongk. p. 27; DYER in HOOK. f. Fl. Brit. Ind. I. p. 280; MIQ. Prol. Fl. Jap. p. 202; ENGL. in ENGL. Bot. Jahrb. VI. p. 60; FORBES et HEMSL. Ind. Fl. Sin. I. p. 75; HENRY List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 324; MATSUM. et HAYATA Enum. Pl. Formos. p. 45; HAYATA Fl. Mont. Formos. p. 60.

*Oleyera japonica* THUNB. Fl. Jap. p. 224.

*Oleyera fragrans* et *Oleyera dubia* CHAMP. in Trans. Linn. Soc. XXI. p. 115.

*Taonabo japonica* SZYSZ. in ENGL. et Prantl. Nat. Pf.-fam. III.-6, p. 188.

HAB. Nantô: Mushazan. South Cape.

DISTRIB. Southern China and Japan. Western Peninsula of India to Ceylon, and Khasia mountains to Sumatra and the Philippine islands.

### 2. *Adinandra* JACK.

*Dichotomous Key to the Formosan Species.*

- (1) Calyx barbate or pilose, hairs long ..... *A. Millettii*.  
 Calyx nearly glabrous or slightly pilose (2)
- (2) Styles glabrous ..... *A. pedunculata*.  
 Styles pilose (3)



- (3) Leaves glabrous on both surfaces..... *A. formosana*.  
 Leaves pilose beneath..... *A. lasiostyla*.

**Adinandra Millettii** BENTH. et HOOK. f. Gen. Plant. I. p. 183;  
 HANCE in Journ. Bot. (1878) p. 9; MAXIM. in Mém. Biol. XII. p. 421;  
 FORBES et HEMSL. Ind. Fl. Sin. I. p. 76; HENRY List Pl. Formos. p. 19;  
 MATSUM. et HAYATA Enum. Pl. Formos. p. 45.

*Cleyera Millettii* HOOK. et ARN. Bot. Beech. Voy. p. 171, t. 33.

HAB. Kelung, Tamsui.

DISTRIB. China: Kwantung.

**Adinandra pedunculata** HAYATA Materials for a Flora of Formosa p. 43. Arborescent. Leaves alternate, shortly petiolate, obovately elliptical or oblong, abruptly acuminate, obtuse at the extremity, 7-8 cm. long, 3-2½ cm. broad, entire on the margin, serrulate towards the apex, veins slightly prominent on both sides, pallid beneath. Flowers axillary, solitary, long pedunculate, glabrous, peduncles 3-4 cm. long. Sepals 5, strongly imbricate, cuneate at the base, ovate, acute, glabrous, somewhat thick, ciliate on the margin, coriaceous, 8 mm. long, 6 mm. broad. Petals 5, cuneate at the base, ovately narrowed, acuminate, somewhat thick, 10 mm. long, 3-4 mm. broad, glabrous; stamens nearly 30, 8 mm. long, filaments geniculate, slightly pilose, anthers linear, pilose, as long as filaments, connectives produced. Ovary 4-celled, broadly ovoid, somewhat pilose, 2½ mm. long, styles filiformed, somewhat glabrous, 8 mm. long, stigmas obscurely 4-lobed.

HAB. Shintiku: Goshizan.

Near *A. acuminata* but differs from it in having glabrous styles and stigmata which are obscurely 4-lobed; also comes near *A. formosana* HAYATA, but quite distinguishable by the larger flowers, numerous (nearly 30) stamens, and 4-celled ovary.

**Adinandra formosana** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 45; and Materials for a Flora of Formosa p. 42.

This comes very near *A. Millettii* which has leaves shining velvety beneath. In the present plant, leaves are quite glabrous on both sides or slightly pubescent, but never velvety beneath.



**Adinandra lasiostyla** HAYATA Materials for a Flora of Formosa p. 42. Arborescent. Branches terete dark-ashy, branchlets sericeo-tomentose towards the apex. Leaves oblong or lanceolate, 8-10 cm. long,  $2\frac{1}{2}$  cm.-3 cm. broad, shortly petioled, entire or obscurely crenulate, glabrous above, tomentose beneath, subcoriaceous, petioles 5 mm. long. Flowers axillary, solitary, shortly pedunculate, peduncles 8 mm. long. Sepals somewhat pilose, ovate, 5 mm. long. Ovary broadly ovoid, styles pilose.

HAB. Tôzan, Mt. Morrison.

Easily distinguished by the leaves which are tomentose beneath. This differs from *A. Millettii* B. et H. which has lanceolate and sericeously barbate sepals.

### 3. *Cleyera* DC.

**Cleyera ochracea** DC. in Prodr. I. p. 524; DYER in Hook. f. Fl. Brit. Ind. I. p. 283; FORBES et HEMSL. Ind. Fl. Sin. I. p. 76; HENRY List Pl. Formos. p. 19; MATSUM. et HAYATA Enum. Pl. Formos. p. 46.

*Cleyera japonica* SIEB. et ZUCC. Fl. Jap. p. 153, t. 81.

HAB. Giran, Kelung, Sôzan, Sabôsan, Tensonpi.

DISTRIB. Central Himalaya, Japan, eastern China.

### 4. *Eurya* THUNB.

#### *Dichotomous Key to the Formosan Species.*

Leaves glabrous ..... *E. japonica*.

Leaves pilose beneath ..... *E. strigillosa*.

**Eurya japonica** THUNB. Fl. Jap. p. 191, t. 25; DC. Prodr. I. p. 525; BENTH. Fl. Hongk. p. 28; DYER in Hook. f. Fl. Brit. Ind. I. p. 284; HOOK. et ARN. Bot. Beech. Voy. p. 260; BLUME Mus. Bot. Lugd.-Bat. II. p. 105; MIQ. Prol. Fl. Jap. p. 202; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 57; FORBES et HEMSL. Ind. Fl. Sin. I. p. 77; HENRY List Pl. Formos. p. 19; DIELS Fl. Centr. Chin. p. 474; PALIBIN Conspect. Fl. Koreæ I. p. 46; MATSUM. et HAYATA Enum. Pl. Formos. p. 46; HAYATA. Fl. Mont. Formos. p. 60.



HAB. Arizan, Tozan, Ganzan, Rinkiho, Inikufuku, Iryokukakusha; Central Mountains; Taiton, Sharyôtô, Kelung, Holisha, Suisha, Shintiku, Bokusekikaku, Kashinro, Botansha.

DISTRIB. The Malay archipelago, southern and central China, and Japan, Khasia, southern Asia, to the Fiji islands.

The same as the Luzon form.

**Eurya strigillosa** HAYATA Fl. Mont. Formos. p. 61. Branchlets very slender, strigillose, at first sericeo-villose. Leaves distichous, approximate, sessile, coriaceous, oblong-acuminate or lanceolate, 10 cm. long,  $2\frac{1}{2}$  cm. broad, base rounded, often slightly unequal, apex acuminate, margin serrulate except the base, teeth acute, glabrous, shining above, strigillose beneath, costas prominent, veins inconspicuous on both sides. Flowers ♂ shorty pedicellate, pedicels 1 mm. long or longer, 2-3-clustered at the axils of the leaves, patent, 8 mm. in diameter. Sepals 5-6, strongly unequal broadly rounded,  $1\frac{1}{2}$  mm. long as broad, somewhat pilose outside. Petals mostly 5, obovately oblong 4 mm. long,  $2\frac{1}{2}$  mm. broad, glabrous, base slightly connate. Stamens nearly 15, glabrous, shorter than petals, filaments flattened,  $2\frac{1}{2}$  mm. long, anthers undulate,  $\frac{1}{3}$  or  $\frac{1}{2}$  long as the filaments. Rudiments of ovary very short, conical, barbate at the apex. Flowers ♀, not yet known.

HAB. Mt. Morrison.

The plant is very like *E. distichophylla* HEMSL.; but differs from it in having serrulate leaves and larger flowers which attain a diameter of even 8 mm.

EURYA DISTICHOPHYLLA MATSUM. (non HEMSL.) = THEA SALICIFOLIA. (CHAMP.)

### 5. *Actinidia* LINDL.

- (1) Leaves elongately oblong, acute or acuminate at the apex.

*Actinidia callosa*.

Leaves broadly oblong, obtuse at the apex. .... *A. Championi*.

**Actinidia callosa** LINDL.; WALP. Ann. I. p. 15; DYER in HOOK. f. Fl. Brit. Ind. I. p. 286; FORBES et HEMSL. Ind. Fl. Sin. I. p. 78; HENRY List Pl. Formos. p. 20; DIELS Fl. Centr. Chin. p. 470; MATSUM. et HAYATA



Enum. Pl. Formos. p. 47; HAYATA Fl. Mont. Formosa. p. 62.

HAB. Kagi: Kishirei.

DISTRIB. Himalaya, Central China to Japan.

**Actinidia Championi** BENTH. Fl. Hongk. p. 26; FORBES et HEMSL. Ind. Fl. Sin. I. p. 78; HENRY List Pl. Formos. p. 20.; MATSUM. et HAYATA Enum. Pl. Formos. p. 47; HAYATA Materials for a Flora of Formosa p. 44.

HAB. Nantō: Mokuriran. Taiton.

OBSERV. Leaves large, ovate, cordate at the base, glabrous on the surface, densely tomentose underneath, nearly entire or obscurely serrulate; flowers in a cyme, cymes axillary, solitary, peduncles 8 cm. long, with many (nearly 30) flowers; sepals and ovary tomentose, reddish brown.

## 6. *Saurauja* WILLD.

**Saurauja Oldhami** HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. I. p. 79; MATSUM. et HAYATA Enum. Pl. Formos. p. 48.

HAB. Tamsui, Mankinshō, South Cape, Shintiku, Hikaku Kelung, Gilan, Hachirisha, Kanshiko, Tensonhi, Keibi, Shinkōgai, Nanko, Shifun, Tōseikaku, Suitenka.

DISTRIB. An endemic plant.

## 7. *Stachyurus* SIEB. et ZUCC.

**Stachyurus præcox** SIEB. et ZUCC. Fl. Jap. I. p. 43, t. 18; MIQ. Prol. Fl. Jap. p. 204; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 59; FORBES et HEMSL. Ind. Fl. Sin. I. p. 79; MATSUM. et HAYATA Enum. Pl. Formos. p. 48; HAYATA Fl. Mont. Formos. p. 62.

*Stachyurus himalaicus* HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 288; DIELS Fl. Centr. Chin. p. 475.

HAB. Mt. Morrison, Kōshūn: Naipun; Suiteiryō, Niki; Mankinshō.

DISTRIB. The Himalayas through central China to Japan.

This is somewhat different from what we have in Japan. The plant should, I think, be regarded as a form of the Japanese species.



8. *Schima* REINW.

**Schima Noronhæ** REINW.; MIQ. Fl. Ind. Bat. I.-2, p. 492; BENTH. Fl. Hongk. p. 29; MAXIM. Mém. Biol. XII. p. 426; FORBES et HEMSL. Ind. Fl. Sin. I. p. 80; HENRY List Pl. Formos. p. 20; MATSUM. in Tōkyō Bot. Mag. XII. p. 68; ITÔ et MATSUM. Tent. Fl. Lutch. p. 328; MATSUM. et HAYATA Enum. Pl. Formos. p. 49; HAYATA Fl. Mont. Formos. p. 63.

*Gordonia javanica* HOOK. f. Bot. Mag. t. 4539.

HAB. Mt. Morrison. Hokkōkei, Kōkō; South Cape.

DISTRIB. The eastern frontier of India; from Cochinchina through the Malay archipelago, and southern China to the Loo-choo islands.

9. *Gordonia* ELLIS.

**Gordonia anomala** SPRENG.; BENTH. Fl. Hongk. p. 29; FORBES et HEMSL. Ind. Fl. Sin. I. p. 80; MATSUM. in Tōkyō Bot. Mag. XII. p. 63; HENRY List Pl. Formos. p. 20; MATSUM. et HAYATA Enum. Pl. Formos. p. 49.

*Camellia axillaris* ROXB.; Bot. Mag. t. 2047; DC. Prodr. I. p. 529.

*Polyspora axillaris* SWEET, "Hort. Brit. ed-1, p. 61," Bot. Mag. t. 4019.

HAB. Kelung, Hokkōkei, Horisha, Botansha, Koshibussha, Kusshaku, Shintengai.

DISTRIB. Hongkong.

10. *Thea* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Leaves pilose. .... *Thea salicifolia*.  
       Leaves glabrous. (2)
- (2) Stamens hairy. (3)  
       Stamens glabrous. (4)
- (3) Leaves elongately oblong, caudate at the apex..... *T. gracilis*.  
       Leaves elongately oblong, slightly or not caudate..... *T. caudata*.



- (4) Petals spathulately obovate.....*T. brevistyla*.  
 Petals obovately rounded. (5)
- (5) Flower-buds glabrous. (6)  
 Flower-buds pilose. (7)
- (6) Flowers smaller less than 2 cm. in diameter.....*T. clainensis*.  
 Flowers larger more than 3 cm. in diameter. ....*T. tenuiflora*.
- (7) Leaves very obtuse at both ends. ....*T. biflora*.  
 Leaves obtusely caudate at the apex, attenuate at the base.  
*T. shinkoensis*.

**Thea salicifolia** SEEM. in Trans. Linn. Soc. XXII. p. 349.

*Camellia salicifolia* CHAMP.; BENTH. Fl. Hongk. p. 30; FORBES et HEMSL.  
 Ind. Fl. Sin. I. p. 82.

*Eurya distichophylla* MATSUM. in Sched. Herb. Tōkyō; MATSUM. et  
 HAYATA Enum. Pl. Formos. p. 46, (non HEMSL.)

HAB. Taishūkutsu and Bōryō.

I have compared the specimen with that in the Kew-Herbarium and  
 have ascertained that *Eurya distichophylla* MATSUM. is exactly the same as  
*Thea salicifolia* SEEM.

**Thea gracilis** (HEMSL.); MATSUM. et HAYATA l.c. p. 50; HAYATA  
 Materials for a Flora of Formosa p. 45.

HAB. Kōshun: Botansha.

OBSERV. Branchlets very slender, pale; leaves narrow, lanceolate cau-  
 date or acuminate, obtuse at the very apex; stamens hairy.

**Thea caudata** (WALL.); HAYATA Fl. Mont. Formos. p. 63

*Camellia caudata* WALL. "Pl. As. Rar. III. p. 36"; DYER in Hook. f.  
 Fl. Brit. Ind. I. p. 293.

HAB. Taitō: Iryokukakusha.

DISTRIB. Himalaya, Khasia mountains, and southern China.

Although I have seen no specimen of the Indian plant, my plant is, so  
 far as I can ascertain, quite referable to this species.

**Thea brevistyla** HAYATA Fl. Mont. Formos. p. 63. Branches slender,  
 first pubescent, at last glabrous. Leaves shortly petiolate, petioles 5 mm.



long, semiterete, sulcate above, pubescent, blades elliptico-oblong, 4-5 cm. long, 2 cm. broad, acute at both ends or obtuse, margin crenulate, slightly repandate, entire towards the base, glabrous on both sides, costas prominent, veins impressed, coriaceous. Flowers axillary, always solitary, patent, 3 cm. in diameter. Sepals deciduous, 4-5, strongly unequal, 2-seriate, broadly ovate, obtuse or mucronate, 6-8 mm. long as broad, pilose on the outside. Petals 5, white, obovately cuneate, sinuately emarginate at the apex or 2-lobed, nearly  $1\frac{1}{2}$  cm. long, 1 cm. broad. Stamens nearly 30, 2-seriate, the outer the longer; filaments mostly as half long as petals, base connate. Ovary globose, sericeo-pilose,  $1\frac{1}{2}$  mm. long. Styles 4, very short, base connate, recurved at the apex, 1 mm. long. Fruits not yet known.

HAB. Arizan and Tozan.

DISTRIB.

**Thea chinensis** SIMS, Bot. Mag. t. 998; DC. Prodr. I. p. 530; SEEM. in Trans. Linn. Soc. XXII. p. 349, t. 61; MATSUM. et HAYATA Enum. Pl. Formos. p. 50 (sub *Camellia*.)

HAB. Widely cultivated in the island.

DISTRIB. India, Japan and China.

**Thea tenuiflora** HAYATA Materials for a Flora of Formosa p. 46. Branches slender, cinereo-rubescens, leafy on the upper portions, young branchlets nigricant, hirsute, perulate at the base, perules rounded, ciliolate, 2-3-seriately arranged, cataphylls spatulate, entire, 1 cm. long. Leaves petiolate, coriaceous, obovately oblong or oblong, 4 cm. long, 16 mm. broad, acute at the apex, obtuse at the extremity, cuneately acute at the base, distinctly serrulate upwards on the margin, but very obscurely at the middle, nearly entire downwards, glabrous on both sides when dried, (in younger stage somewhat pilose) minutely punctate on both sides, costa, veins and veinlets distinctly elevated, petioles 5 mm. long. Flowers sessile, axillary, solitary. Sepals nearly 5, unequal, deciduous, broadly rounded sparingly pilose, coriaceous, 4 mm. broad, ciliolate on the margin. Petals nearly 5, unequal, obovately oblong, rounded or truncately rounded at the apex, base cuneate, 18 mm. long, 10 mm. broad. Stamens numerous, 8 mm.



long, filaments connate at the base. Ovary minutely rounded, 1 mm. long. Styles 3, entirely connate, 3 mm. long.

HAB. Wantang.

Near *T. Sasanqua*, but differs from it in having rounded petals. The petals of the present plant are usually oblong and rounded at the apex, while there of *T. Sasanqua* are generally, if not always, notched at the apex.

**Thea biflora** HAYATA Materials for a Flora of Formosa p. 44. Branches fusco-cinerascent, or rubescent towards the apex. Leaves alternate remotely arranged, oblong, 5 cm. long,  $2\frac{1}{3}$  cm. broad, acute at the apex, retuse at the extremity, obtusely rounded at the base, margin serrulate from middle to apex, nearly entire downwards, pallido-flavescent on both surfaces when dried, costa, veins and veinlets elevated above, veins and veinlets inconspicuous below. Costas and petioles shortly hirsute above, glabrous beneath, petioles 4 mm. long. Flowers in pairs at the apex of the branches, sessile. Flower-buds oblong, sericeo-tomentose. Sepals 5-8, very unequal, very much imbricate, deciduous, 4-seriate, (flower-axis 5 mm. long,) broadly orbicular, densely long sericeo-tomentose on the back at the centre and apex, coriaceous at the centre, thinner on the margin, glabrous inside, the outermost the smallest, the inner the larger, 15 mm. long, 2 mm. broad. Petals 5, unequal, interior ones larger, obovately rounded, truncately rounded at the apex, 2 cm. long,  $1\frac{1}{2}$  cm. broad, hirsute outside at the base, glabrous otherwise, inner ones narrower. Stamens numerous half as long as petals, filaments connate to the midway, anthers ovate, nearly 2 mm. long,  $1\frac{1}{3}$  mm. broad, emarginate on both ends, connectives more or less dilated. Ovary ovoid densely long tomentose, hairs 2 mm. long, erect, patent, styles 4, connate to the midway or entirely connate, erect, stigma on the outside at the apex of the style, obliquely truncate.

HAB. Kagi, Kodenshō, by. T. KAWAKAMI and U. MORI. Oct. 1906, (No. 1758).

There is nothing like this at Kew. I think it may be a species not yet described.

**Thea shinkœnsis** HAYATA Materials for a Flora of Formosa p. 45.



Branches slender fuscent, sometimes ashy coloured. Leaves arranged towards the apex of the branches, alternate, petiolate, oblong, obovate, 10–12 cm. long,  $3\frac{1}{2}$  cm. broad, subacute at the apex or acuminate, obtuse at the extremity, margin serrate towards the apex, entire downwards, cuneate at the base, veinlets elevated and reticulated beneath, minutely prominently punctate, coriaceous, petioles short, 6 mm. long. Flowers solitary at the axils of the apical leaves, shortly pedunculate, peduncles 3–4 mm. long, nearly pilose. Flower-buds ovate. Flowers when opened 3– $3\frac{1}{2}$  cm. in diameter. Sepals 5, strong imbricate, deciduous, inequal, margin ciliate, coriaceous, somewhat thick, sericeo-pubescent, outermost ones smaller, broadly orbicular or broadly crescent-shaped, 4 mm. broad, 3 mm. long, innermost larger, embracing flower-buds, broadest, obtusely acute at the base, thick at the middle, thinner towards the margin, 2 cm. broad. Petals 5–6, inequal, connate at the base, obovately oblong, 3–exterior ones larger, obovately oblong,  $1\frac{1}{2}$  cm. long, 12 mm. broad, truncately emarginate at the apex, narrowed at the base, margin curled, 2–interior ones smaller, narrowed. Stamens numerous, connate at the base, shorter than petals, 8 mm. long. Ovary densely shortly sericeo-hirsute, 3-celled (placentas incrassate) 7 mm. long (including style) ovoid, gradually narrowed at the apex to the style. Styles 3, connate to the midway, or entirely connate, stigma on the apex of the branchlets of the style, 2-lamellate.

HAB. Shinkō : Remogansha, coll. T. KAWAKAMI and U. MORI, 1906, June.

This comes very near *T. reticulata* ; but differs from it by the leaves and flowers.

*Species imperfectly known.*

CAMELLIA EURYOIDES LINDL.; MATSUM. et HAYATA Enum. Pl. Formos. p. 49.

Malvaceæ.

*Conspectus of the Formosan Genera.*

Malvaceæ. Herbs or shrubs, ripe carpels separating from the axis. Styles as many as the carpels. (1)



- Ureneæ. Styles or stigmatic branches twice as many as the carpels. (5)  
 Hibisceæ. Herbs or shrubs. Fruits capsular, sepals leafy. Staminal tube truncate or 5-toothed at the apex. (6)  
 Bombaceæ. Trees. Sepals leathery.....*Bombax*. 10  
 (1) Ovules solitary. (2)  
     Ovules more than two. ....*Abutilon*. 5  
 (2) Ovules ascending. (3)  
     Ovules pendulous. ....*Sida*. 4  
 (3) Stigma linear. (4)  
     Stigma capitate. ....*Malvastrum*. 3  
 (4) Bracteoles more than six. ....*Althæa*. 1  
     Bracteoles three .....*Malva*. 2  
 (5) Carpels beset with spines. ....*Urena*. 6  
 (6) Stigmas spreading. ....*Hibiscus*. 7  
     Stigmas coherent in a club-shaped mass. (7)  
 (7) Bracteoles 5, small. ....*Thespesia*. 8  
     Bracteoles 3, large, cordate. ....*Gossypium*. 9

### 1. *Althæa* LINN.

*Althæa rosea* CAV.; HAB. Taitō: Daironkōsha, cultivated?

### 2. *Malva* LINN.

*Malva sylvestris* LINN. Sp. Pl. ed-2, p. 969; DC. Prodr. I. p. 432; MASTERS in HOOK. f. Fl. Brit. Ind. I. p. 320; FORBES et HEMSL. Ind. Fl. Sin. I. p. 84; DIELS Fl. Centr. Chin. p. 469; MATSUM. et HAYATA Enum. Pl. Formos. p. 50.

*Malva mauritiana* LINN. Sp. Pl. ed-2, p. 970; MAXIM. Ind. Fl. Pek. in Prim. Fl. Amur. p. 469.

*Malva mauritiana*  $\beta$  *sinensis* DC. Prodr. I. p. 432.

HAB. Pachina.

DISTRIB. Plant of the Old World; widely diffused in the northern temperate regions.



### 3. *Malvastrum* A. GRAY.

***Malvastrum tricuspidatum*** A. GRAY; BENTH. Fl. Hongk. p. 32;  
FORBES et HEMSL. Ind. Fl. Sin. I. p. 84; HENRY List Pl. Formos. p. 20;  
MATSUM. et HAYATA Fnum. Pl. Formos. p. 51.

HAB. Hōsan, Tamsui.

DISTRIB. Indigene of America; but now widely diffused.

### 4. *Sida* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves densely villose ..... *S. cordifolia*.  
Leaves glabrous, slightly hispid. (2)
- (2) Leaves cordate, cuspidate at the base. (3)  
Leaves rhomboid, acute or obtuse or lanceolate. (4)
- (3) Leaves small, 2½ cm. long. .... *S. humilis*.  
Leaves large, 8-9 cm. long. .... *S. mysorensis*.
- (4) Leaves much broader, peduncles longer ..... *S. rhombifolia*.  
Leaves much narrower, peduncles shorter. .... *S. acuta*.

***Sida cordifolia*** LINN. Sp. Pl. ed-2, p. 961; DC. Prodr. I. p. 464;  
BENTH. Fl. Hongk. p. 33; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 324; FORBES  
et HEMSL. Ind. Fl. Sin. I. p. 85; HENRY List Pl. Formos. p. 20; MATSUM.  
et HAYATA Enum. Pl. Formos. p. 51.

HAB. Tamsui, Shintiku, Chūkō, Takow.

DISTRIB. Widely diffused in tropical and subtropical regions.

***Sida humilis*** WILLD. Sp. Pl. III. p. 744; DC. Prodr. I. p. 463;  
BENTH. Fl. Hongk. p. 32; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 322;  
FORBES et HEMSL. Ind. Fl. Sin. I. p. 85; HENRY List Pl. Formos. p. 20;  
MATSUM. et HAYATA Enum. Pl. Formos. p. 52.

HAB. Tainan, Takow, South Cape.

DISTRIB. Tropical Asia, Africa and America.



**Sida mysorensis** W. et A.; HOOK. f. Fl. Brit. Ind. I. p. 322; HAYATA Materials for a Flora of Formosa p. 47.

HAB. Akō: Chōshūshō.

OBSERV. Leaves soft tomentose, cordate, abruptly acuminate, margin serrulate, 9 cm. long, 7 cm. broad, petioles 5 cm. long; very like *S. humilis* WILLD.

DISTRIB. India and Philippines.

**Sida rhombifolia** LINN. Sp. Pl. ed-2, p. 961; DC. Prodr. I. p. 452; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 32; BENTH. Fl. Hongk. p. 32, et Fl. Austral. I. p. 196; ROXB. Fl. Ind. III. p. 176; FORBES et HEMSL. Ind. Fl. Sin. I. p. 85; E. BAKER in Journ. Bot. (1892) p. 239; HENRY List Pl. Formos. p. 20; MATSUM. et HAYATA Enum. Pl. Formos. p. 52.

HAB. Maruyama, Biōritsu, Agincort, Kelung, Shintiku, Pachina, Kushaku, Shintengai.

DISTRIB. Widely spread in tropical and subtropical regions of the World.

**Sida acuta** BURM.; BENTH. Fl. Hongk. p. 32; FORBES et HEMSL. Ind. Fl. Sin. I. p. 84; HENRY List Pl. Formos. p. 20; MATSUM. et HAYATA Enum. Pl. Formos. p. 51.

*Sida carpinifolia* LINN. f.; DC. Prodr. I. p. 461; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 323.

*Sida Stauntoniana* DC. Prodr. I. p. 460.

HAB. Shintiku, Kelung, Pachina, Tamsui, Giranchō, Holisha, Takow, South Cape.

DISTRIB. Widely diffused in the Tropics.

## 5. *Abutilon* GÆRTN.

**Abutilon indicum** G. DON; BENTH. Fl. Hongk. p. 33, et Fl. Austral. I. p. 202; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 326; MAXIM. in Mém. Biol. XII. (1886) p. 426; WIGHT Ic. Pl. Ind. Or. t. 12; FORBES et HEMSL. Ind. Fl. Sin. I. p. 86; HENRY List Pl. Formos. p. 21; ITÔ et MATSUM. Tent. Fl. Lutch. p. 335; MATSUM. et HAYATA Enum. Pl. Formos. p. 53.



*Sida indica* LINN. Sp. Pl. ed-2, p. 964; DC. Prodr. I. pp. 470, et 471; ROXB. Fl. Ind. III. p. 179.

*Abutilon cysticarpum* HANCE in WALP. Ann. II. p. 157.

*Sida asiatica* LINN. Sp. Pl. ed-2, p. 964; DC. Prodr. I. p. 470; ROXB. Fl. Ind. III. p. 179.

HAB. Pachina, Bōryō, Reigaryō, Takow, Taitō, Bokusekikaku, Agincort.  
DISTRIB. Tropical Asia, Africa and Australia.

There is in the Tōkyō-herbarium another specimen labelled *A. asiaticum* which is hardly distinguishable from *A. indicum*.

## 6. *Urena* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Leaves sinuately three lobed. .... *Urena sinuata*.  
Leaves slightly lobed. .... *U. lobata*.

***Urena sinuata*** LINN. Sp. Pl. ed-2, p. 974; DC. Prodr. I. p. 442; BENTH. Fl. Hongk. p. 34; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 329; MIQ. Prol. Fl. Jap. p. 208; FRANCH. et SAV. Enum. Pl. Jap. I. p. 63; FORBES et HEMSL. Ind. Fl. Sin. I. p. 87; GÜRKE in ENGL. Bot. Jahrb. XVI. (1893) p. 377; HENRY List Pl. Formos. p. 21; ITō et MATSUM. Tent. Fl. Lutch. p. 337; MATSUM. et HAYATA Enum. Pl. Formos. p. 54.

*Urena morifolia* DC. Prodr. I. p. 442.

*Urena muricata* DC. Prodr. I. p. 442.

*Urena heterophylla* SMITH; DC. Prodr. I. p. 442.

HAB. Kelung, Kusshaku, Shintengai, Pachina, Takow, Tamsui.

DISTRIB. Common in the Tropics of both Hemispheres.

***Urena lobata*** LINN. Sp. Pl. ed-2, p. 974; DC. Prodr. I. p. 441; LOUR. Fl. Cochinch. ed-WILLD. p. 507; BENTH. Fl. Hongk. p. 34; ROXB. Fl. Ind. III. p. 182; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 329; FORBES et HEMSL. Ind. Fl. Sin. I. p. 86; SCHUMAN in ENGL. et PRANTL Nat. Pfl.-fam. III.-6, p. 45; HENRY List Pl. Formos. p. 21; MAKINO, in Bot. Mag. Tōkyō X. (1896) p. 68; GÜRKE in ENGL. Bot. Jahrb. XVI. (1893) p. 370; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 469.



*Urena diversifolia* WALP. Rep. V. p. 89.

*Urena Lappago* SMITH; DC. Prodr. I. p. 442.

Var. **tomentosa** MIQ. Fl. Ind. Bot. I. pt.-2, p. 148; GÜRKE in ENGL. Bot. Jahrb. XVI. (1893) p. 372; ITÔ et MATSUM. Tent. Fl. Lutch. p. 336; MATSUM. et HAYATA Enum. Pl. Formos. p. 53.

HAB. Biōritsu, Shintiku, Pachina, Kōtōshō, Kusshaku, Shintengai, Shichiseitonzan.

DISTRIB. Widely diffused in the warm regions.

## 7. *Hibiscus* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Stem weak, trailing.....*H. surattensis*.  
Stem erect. (2)
- (2) Leaves deeply lobate. (3)  
Leaves not at all lobate, or slightly lobate. (4)
- (3) Leaves ternately cleft. ....*H. Trionum*.  
Leaves palmately deeply 5-7 lobed. ....*H. Abelmoschus*.
- (4) Leaves grossly dentate. (5)  
Leaves crenate or entire. (6)
- (5) Leaves slightly three-lobed. ....*H. syriacus*.  
Leaves not lobed. ....*H. rosa-sinensis*.
- (6) Leaves more or less angular, acute at the apex.....*H. mutabilis*.  
Leaves very rounded, profoundly cordate, shortly caudate  
at the apex. ....*H. tiliaceus*.

**Hibiscus surattensis** LINN. Sp. Pl. ed-2, p. 979; DC. Prodr. I. p. 449; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 334; HANCE in Journ. Bot. (1878) p. 225; FORBES et HEMSL. Ind. Fl. Sin. I. p. 88; HENRY List Pl. Formos. p. 21; MATSUM. et HAYATA Enum. Pl. Formos. p. 56.

HAB. Mankinshō.

DISTRIB. Tropics of the Old World.

**Hibiscus Trionum** LINN.  $\beta$  **ternatus** CAV.



HAB. Kelung (cultivated?)

DISTRIB.

**Hibiscus Abemoschus** LINN. Sp. Pl. ed-2, p. 980; DC. Prodr. I. p. 452; ROXB. Fl. Ind. III. p. 202; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 342; BENTH. Fl. Hongk. p. 34; HANCE in Journ. Bot. (1878) p. 225; FORBES et HEMSL. Ind. Fl. Sin. I. p. 87; HENRY List Pl. Formos. p. 21; ITÔ et MATSUM. Tent. Fl. Lutch. p. 338; MATSUM. et HAYATA Enum. Pl. Formos. p. 54.

*Hibiscus flavescens* CAV.; DC. Prodr. I. p. 454.

*Abemoschus moschatus* MENCH.; WIGHT Ic. Pl. Ind. Or. t. 399.

HAB. Pachina, Niki, Suichōryū, Taito, Tainansha, Maruyama, Takow.

DISTRIB. Tropical Asia; cultivated everywhere in the warm regions of the World.

**Hibiscus syriacus** LINN. Sp. Pl. ed-2, p. 978; LOUR. Fl. Cochinch. ed-WILLD. p. 511; ROXB. Fl. Ind. III. p. 195; DC. Prodr. I. p. 695; MIQ. Prol. Fl. Jap. p. 207; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 344; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 64; THUNB. Fl. Jap. p. 272; FORBES et HEMSL. Ind. Fl. Sin. I. p. 88; HENRY List Pl. Formos. p. 21; ITÔ et MATSUM. Tent. Fl. Lutch. p. 341; DIELS Fl. Centr. Chin. p. 469; MATSUM. et HAYATA Enum. Pl. Formos. p. 56.

*Hibiscus chinensis* DC. Prodr. I. p. 455.

HAB. Pachina, Akō.

DISTRIB. Common in China.

**Hibiscus rosa-sinensis** LINN. Sp. Pl. ed-2, p. 977; LOUR. Fl. Cochinch. ed-WILLD. p. 510; DC. Prodr. I. p. 448; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 334; Bot. Mag. t. 158; FORBES et HEMSL. Ind. Fl. Sin. I. p. 87; ROXB. Fl. Ind. III. p. 194; HOOK. et ARN. Bot. Beech. Voy. p. 259; MIQ. Prol. Fl. Jap. p. 207; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 64; FORBES et HEMSL. Ind. Fl. Sin. I. p. 87; HENRY List Pl. Formos. p. 21; MATSUM. et HAYATA Enum. Pl. Formos. p. 55.

HAB. Shintiku, Kelung, Tainan, Botansha, Tōseikaku, Maruyama, Takow.



DISTRIB. Southern China ; Kwangtung ; Loo-choö.

**Hibiscus mutabilis** LINN. Sp. Pl. ed-2, p. 977 ; LOUR. Fl. Cochinch. ed-WILLD. p. 511 ; DC. Prodr. I. p. 452 ; HANCE in Journ. Bot. (1879) p. 9 ; FRANCHET Pl. David. p. 58 ; ROXB. Fl. Ind. III. p. 201 ; THUNB. Fl. Jap. p. 272 ; MIQ. Prol. Fl. Jap. p. 207 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 64 ; MAST. in Hook. f. Fl. Brit. Ind. I. p. 344 ; MAXIM. in Mél. Biol. XII. p. 427 (1886) ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 87 ; HENRY List Pl. Formos. p. 21 ; ITÔ et MATSUM. Tent. Fl. Lutch. p. 340 ; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 469 ; MATSUM. et HAYATA Enum. Pl. Formos. p. 55.

HAB. Takow, Goshōrin, Sooboonsha, Pachina, Kōtōshō, Taitōchō, Dai-hōrō, Biōkōsha, Hinan, Rokuryō, Taihoku.

DISTRIB. Common in China.

**Hibiscus tiliaceus** LINN. Sp. Pl. ed-2, p. 976 ; LOUR. Fl. Cochinch. ed-WILLD. p. 509 ; DC. Prodr. I. p. 454 ; MAST. in Hook. f. Fl. Brit. Ind. I. p. 343 ; ROXB. Fl. Ind. III. p. 192 ; BENTH. Fl. Hongk. p. 35, et Fl. Austral. I. p. 218 ; MAXIM. Mél. Biol. XII. p. 427 (1886) ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 88 ; HENRY List Pl. Formos. p. 21 ; ITÔ et MATSUM. Tent. Fl. Lutch. p. 338 ; MATSUM. et HAYATA Enum. Pl. Formos. p. 56.

*Paritium tiliaceum* A. ST. Hil. ; WIGHT Ic. Pl. Ind. Or. t. 7 ; HOOK. et ARN. Bot. Beech. Voy. p. 259.

HAB. Shintiku, Chūkō, Sharyōtō, Tamsui, Kōketsuzan, Ringaryō, Tōbō, Takow, Bōryō, Kwarenkō, Kōtōshō, Kussaku, Kentan.

DISTRIB. in the Tropics of both Hemispheres.

## 8. *Thespesia* CORR.

**Thespesia populnea** CORR. ; DC. Prodr. I. p. 456 ; WIGHT Ic. t. 8 ; BEDD. Fl. Sylv. t. 63 ; MIQ. Fl. Ind. Bat. I. pt.-2, p. 150 ; MASTERS in Hook. f. Fl. Brit. Ind. I. p. 345 ; MERRILL in Philip. Journ. Sci. IV. Suppl. p. 78 et 419 ; HAYATA Materials for a Flora of Formosa p. 48.

HAB. Kōshūn : Manshū, by G. NAKAHARA, Dec. 1905, (No. 873).

DISTRIB. India, tropical Asia, the Pacific Islands, Africa.



OBSERV. Leaves cordate oblong, acute or abruptly acute, entire, glabrous, 13 cm. long, 10 cm. broad, long petiolate, petioles 10 cm. long; flowers in my specimen subterminal, solitary, pedunculate. New to the Formosan flora.

### 9. *Gossypium* LINN.

*Dichotomous Key to the Formosan Species.*

- (1) Bracts slightly dentate or entire..... *Gossypium Nanking*.  
 Bracts lacinate on the margin. .... *G. herbaceum*.

***Gossypium herbaceum* LINN.** Sp. Pl. ed-2, p. 975; LOUR. Fl. Cochinch. ed-WILLD. p. 505; THUNB. Fl. Jap. p. 271; DC. Prodr. I. p. 456; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 346; WIGHT Ic. Pl. Ind. Or. tt. 9 et 11; LEDEB. Fl. Ross. I. p. 438; FORBES et HEMSL. Ind. Fl. Sin. I. p. 88; HENRY List Pl. Formos. p. 21; ITÔ et MATSUM. Tent. Fl. Lutch. p. 343; MATSUM. et HAYATA Enum. Pl. Formos. p. 57.

*Gossypium religiosum* ROXB. Fl. Ind. III. p. 185.

*Gossypium indicum* LAM.; DC. Prodr. I. p. 456; MIQ. Fl. Ind. Bat. pt-2, p. 162; MIQ. Prol. Fl. Jap. p. 207; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 65.

HAB. Shizangan, Kaisa.

DISTRIB. Cultivated everywhere.

***Gossypium Nanking* MYER, HAYATA** Materials for a Flora of Formosa p. 48.

HAB. Nantô: Nankôkei.

DISTRIB.

I am following Sir GEORGE WATT's determination who has most cordially examined the plant at my request.

### 10. *Bombax* LINN.

***Bombax malabaricum* DC.** Prodr. I. p. 479; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 349; FORBES et HEMSL. Ind. Fl. Sin. I. p. 89; HENRY List Pl. Formos. p. 21; MATSUM. et HAYATA Enum. Pl. Formos. p. 58.

HAB. Shintiku, Tainan, Takow.

DISTRIB. Tropical Asia and America.



## Sterculiaceæ

*Conspectus of the Formosan Genera.*

- (1) Flowers unisexual or polygamous. Petals 0. (2)  
 Flowers hermaphrodite. Petals exist. (3)
- (2) Anthers numerous. .... *Sterculia*. 1  
 Anthers 5, whorled. .... *Heritiera*. 2
- (3) Petals deciduous. Androecium columnar below, dilated above into a cup,  
 on the margin of which are placed the anthers usually alternating with  
 staminodes. (4)  
 Petals marcescent, flat. Androecium tubular at the base only; stamens  
 5, staminodes 0. (6.)
- (4) Capsules membranous, inflated. .... *Kleinhovia*. 3  
 Capsules more or less woody, not inflated. (5)
- (5) Anther-cells divaricate; seeds not winged. .... *Helicteres*. 4  
 Anther-cells parallel; seeds winged. .... *Pterospermum*. 5
- (6) Ovary 2-celled. .... *Melochia*. 6  
 Ovary of one carpel .... *Waltheria*. 7

1. *Sterculia* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Leaves oblong, very shortly and obtusely caudate .... *Sterculia nobilis*.  
 Leaves angular, sinuately three lobed .... *S. plataniifolia*.

***Sterculia nobilis*** R. BROWN; HAYATA Materials for a Flora of Formosa  
 p. 48.

*Nom. indig.* Pin-pon.

*HAB.* Tainan, by. T. KAWAKAMI, Aug. 1906, (No. 1440).

*DISTRIB.* China and Sumatra.

*OBSERV.* A small tree; leaves large, oblong, 30 cm. long, 15 cm. wide,



membranaceous, nerves distinct, petioled, petioles 6 cm. long. Panicles 15 cm. long, loosely flowered; flowers polygamous. Calyx campanulate, 5-lobed, lobes lanceolate, hairy. Fl. ♂: staminal column shorter than the calyx, declining, anthers sessile on the outside of the very short lobes, forming a globular terminal head. Fl. ♀: ovary stalked, 4-lobed, with anthers at its base, style declining, stigma 4-lobed, tomentose. Capsules fleshy, leather-like, thick, ovate, beaked, sessile, 5-6 cm. long, bright scarlet slightly velvety. The plant is not indigenous to Formosa, but comes from the opposite continent and is found only in cultivation.

The present *Sterculia* is near *S. lanceolata* CAV. but differs from it in the calyx with lanceolate lobes.

***Sterculia platanifolia*** LINN. f.; DC. Prodr. I. p. 483; BENTH. Fl. Hongk. p. 36; Kurz in Journ. Bot. (1873) p. 193; FRANCH. et SAV. Enum. Pl. Jap. I. p. 65; FORBES et HEMSL. Ind. Fl. Sin. I. p. 90; MIQ. Prol. Fl. Jap. p. 256; HENRY List Pl. Formos. p. 22; ITÔ et MATSUM. Tent. Fl. Lutch. p. 343; MATSUM. et HAYATA Enum. Pl. Formos. p. 58.

*Sterculia tomentosa* THUNB. Ic. Pl. Jap. Decas. IV. t. 8.

*Sterculia pyriformis* BUNGE; WALP. Rep. I. p. 335.

*Hibiscus simplex* LINN. Sp. Pl. ed-2, p. 977.

*Firmiana platanifolia* SCHOTT; WALP. Rep. V. p. 104.

HAB. Tamsui, South Cape, Tappansha.

DISTRIB. Japan and China.

## 2. *Heritiera* AIT.

***Heritiera littoralis*** AIT. "Hort. Kew. p. 546," et ed-2. V. p. 339; DC. Prodr. I. p. 484; BENTH. Fl. Hongk. p. 36, et Fl. Austral. I. p. 231; MAXIM. in ENGL. Bot. Jahrb VI. p. 61; ROXB. Fl. Ind. III. p. 142; MIQ. Fl. Ind. Bat. I. pt-2, p. 179; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 362; FORBES et HEMSL. Ind. Fl. Sin. I. p. 90; MATSUM. in Tōkyō Bot. Mag. XV. p. 53; HENRY List Pl. Formos. p. 22; ITÔ et MATSUM. Tent. Fl. Lutch. p. 343; MATSUM. et HAYATA Enum. Pl. Formos. p. 59.

HAB. Tainan, Kelung, South Cape.



DISTRIB. On sea-shores of tropical Asia; Australia, Polynesia, eastern Africa.

### 3. *Kleinhovia* LINN.

**Kleinhovia Hospita** LINN. Sp. Pl. ed-2, p. 1365; DC. Prodr. I. p. 488; HANCE in Journ. Bot. (1885) p. 322; FORBES et HEMSL. Ind. Fl. Sin. I. p. 90; HENRY List Pl. Formos. p. 22; MATSUM. in Tōkyō Bot. Mag. XV. p. 53; MATSUM. et HAYATA Enum. Pl. Formos. p. 59.

HAB. Hinan, Tamarikei, Takow, Mankinshō, Tappansha.

DISTRIB. Tropical Asia; Africa and Polynesia.

### 4. *Helicteres* LINN.

**Helicteres angustifolia** LINN. Sp. Pl. ed-2, p. 1366; DC. Prodr. I. p. 476; LOUR. Fl. Cochinch. ed-WILLD. p. 647; BENTH. Fl. Hongk. p. 37; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 365; FORBES et HEMSL. Ind. Fl. Sin. I. p. 90; HENRY List Pl. Formos. p. 22; MATSUM. in Tōkyō Bot. Mag. XV. p. 53; ITō et MATSUM. Tent. Fl. Lutch. p. 344; MATSUM. et HAYATA Enum. Pl. Formos. p. 59.

*Helicteres lanceolata* DC. Prodr. I. p. 476

HAB. Shintiku, Chūkō, Taihoku, Taiton, Taichokuzan, Takow, Mankinshō.

DISTRIB. Malay Archipelago and Peninsula.

### 5. *Pterospermum* SCHREB.

**Pterospermum formosanum** MATSUM. in MATSUM. et HAYATA Enum. Pl. Formos. p. 62; HAYATA Materials for a Flora of Formosa p. 49.

This is very near to, or perhaps the same as, a Bornean specimen preserved at Kew, labelled "*P. fuscum* KUTH.?" which specimen, however, is certainly different from the type of the named species.

### 6. *Melochia* LINN.

**Melochia corchorifolia** LINN. Sp. Pl. ed-2, p. 675; HANCE in Journ. Bot. (1878) p. 9; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 374; ROXB.



Fl. Ind. III. p. 139; BENTH. Fl. Austral. I. p. 235; FORBES et HEMSL. Ind. Fl. Sin. I. p. 91; HENRY List Pl. Formos. p. 22; MATSUM. in Tōkyō Bot. Mag. XV. p. 56; ITŌ et MATSUM. Tent. Fl. Lutch. p. 345; DIELS Fl. Centr. Chin. p. 470; MATSUM. et HAYATA Enum. Pl. Formos. p. 60.

*Melochia concatenata* LINN. Sp. Pl. ed-2, p. 944.

*Melochia truncata* WILLD. Sp. Pl. III. p. 601.

*Riedleia eoncatenata* DC. Prodr. I. p. 492.

*Riedleia corchorifolia* DC. Prodr. I. p. 491.

*Riedleia supina* DC. Prodr. I. p. 491.

HAB. Taihoku, Pachina, Takow, Mankinshō.

DISTRIB. Common in Tropics.

## 7. *Waltheria* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Leaves larger, densely villose, style pectinate at the apex.... *W. indica*.  
 Leaves smaller scarcely villose, style fimbriate towards the apex.....  
 ..... *W. Makinoi*.

***Waltheria indica*** LINN. Sp. Pl. ed-2, p. 941; DC. Prodr. I. p. 493; HANCE in Journ. Linn. Soc. XIII. p. 100; FORBES et HEMSL. Ind. Fl. Sin. I. p. 91; HENRY List Pl. Formos. p. 22; MATSUM. in Tōkyō Bot. Mag. XV. p. 56; MATSUM. et HAYATA Enum. Pl. Formos. p. 61.

*Waltheria americana* LINN. Sp. Pl. ed-2, p. 941; DC. Prodr. I. p. 492; BENTH. Fl. Hongk. p. 38.

HAB. Tainan, Kisōkō, Taihoku, Takow, Mankinshō.

DISTRIB. Southern and eastern China.

***Waltheria Makinoi*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 61, t. 5. Shrub, branches slender, ferrugineo-pubescent. Leaves alternate, petiolate, stipulate, ovate, elliptical, base rounded, subcordate, 2-2.5 cm. long, 1.5-1.8 cm. broad, margin serrate, serras acute, tri-nerved, costas impressed above, prominent beneath, densely villosely pubescent, subbicolored, petioles 5-6 mm. long, stipules very small, subulate. Flowers small, glomerate at the axils, bracteate, bracts lanceolate, villose. Calyx campanulate, 5-lobate,







- (2) Leaves smaller, cuneate at the base. .... *G. piscatorum*.  
 Leaves larger, slightly cordate at the base. .... *G. parviflora*.

**Grewia tiliæfolia** VAHL. "Symb. Bot. I. p. 35"; ROXB. Fl. Ind. II. p. 587; BED. Fl. Sylvat. t. 108; HOOK. f. Fl. Brit. Ind. I. p. 386; HENRY List Pl. Formos. p. 23; MATSUM. et HAYATA Enum. Pl. Formos. p. 36.

HAB. Mankinshō.

DISTRIB. Asia and tropical Africa.

**Grewia piscatorum** HANCE "in Ann. Sc. Nat. 5<sup>e</sup> ser. XV. p. 208"; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List Pl. Formos. p. 23; MATSUM. et HAYATA Enum. Pl. Formos. p. 63.

HAB. Kōtōshō, Kelung, Biōritsu, Takow.

DISTRIB. Southern China.

**Grewia parviflora** BUNGE; WALP. Rep. I. p. 360; HANCE in Journ. Bot. (1882) p. 3; FRANCHET Pl. David. p. 59; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List Pl. Formos. p. 23; DIELS Fl. Centr. Chin. p. 468; PALIBIN Conspect. Fl. Koreæ I. p. 47; MATSUM. et HAYATA Enum. Pl. Formos. p. 62.

HAB. Biōritsu, Tamsui, Pachina, Mankinshō, South Cape.

DISTRIB. Central China and Corea.

## 2. *Corchorus* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Capsules globose, not beaked. .... *C. capsularis*.  
 Capsules elongated, beaked. (2)  
 (2) Capsules elongated, beak entire. .... *C. olitorius*.  
 Capsules elongated, beak 3-fid, spreading. .... *C. acutangulus*.

**Corchorus capsularis** LINN. Sp. Pl. ed-2, p. 746; DC. Prodr. I. p. 505; BENTH. Fl. Hongk. p. 40; ROXB. Fl. Ind. II. p. 581; WIGHT Ic. Pl. Ind. Or. t. 311; MIQ. Fl. Ind. Bat. I. pt-2, p. 194; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 397; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List



Pl. Formos. p. 23; DIELS Fl. Centr. Chin. p. 497; MATSUM. et HAYATA Enum. Pl. Formos. p. 64.

HAB. Shirin, Takow.

DISTRIB. Spontaneous in warm regions of the World.

**Corchorus olitorius** LINN.; DC. Prodr. I. p. 504; ROXB. Fl. Ind. II. p. 581; MIQ. Fl. Ind. Bat. I. pt.-2, p. 195; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 397; HENRY List Pl. Formos. p. 23; MATSUM. et HAYATA Enum. Pl. Formos. p. 65.

*Corchorus decemangularis* ROXB. Fl. Ind. II. p. 582.

HAB. Pachina, Biōritsu, Tōseikaku, Takow, Mankinshō.

DISTRIB. India.

**Corchorus acutangulus** LAM.; DC. Prodr. I. p. 505; BENTH. Fl. Hongk. p. 40, et Fl. Austral. I. p. 277; WIGHT Ic. Pl. Ind. Or. t. 739; MAXIM. in Mém. Biol. XII. p. 428 (1886); MAST. in HOOK. f. Fl. Brit. Ind. I. p. 398; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List Pl. Formos. p. 23; ITŌ et MATSUM. Tent. Fl. Lutch. p. 348; DIELS Fl. Centr. Chin. p. 467; MATSUM. et HAYATA Enum. Pl. Formos. p. 64.

*Corchorus fuscus* ROXB. Fl. Ind. II. p. 582.

HAB. Tamsui, Takow, Bōkotō.

DISTRIB. Tropical and subtropical Asia, India, tropical Africa, Australia and west Indias.

### 3. *Triumfetta* LINN.

*Dichotomous Key to the Formosan Species.*

- (1) Leaves broadly rhomboid, shortly cuspidate. .... *Triumfetta rhomboidea*.  
 Leaves ovate, acuminate. .... *T. pilosa*.

**Triumfetta rhomboidea** JACQ.; DC. Prodr. I. p. 507; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 395; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List Pl. Formos. p. 23; MAKINO in Tōkyō Bot. Mag. IX. (1895) p. 257; ITŌ et MATSUM. Tent. Fl. Lutch. p. 346; MATSUM. et HAYATA Enum. Pl. Formos. p. 63.



*Triumfetta angulata* LAM.; WIGHT Ic. Pl. Ind. Or. t. 320; BENTH. Fl. Hongk. p. 41.

*Triumfetta Bartramia* LINN.; ROXB. Fl. Ind. II. p. 463.

*Triumfetta trilocularis* ROXB. Fl. Ind. II. p. 462.

HAB. Kelung, Tamsui, Takow, Bōryō Kussaku, Shintenga, Shintiku.

DISTRIB. Tropical and Subtropical Asia, tropical Africa, Malay Peninsula, America.

***Triumfetta pilosa*** ROTH; DC. Prodr. I. p. 506; BENTH. Fl. Hongk. p. 41; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93; HENRY List Pl. Formos. p. 23; MATSUM. et HAYATA Enum. Pl. Formos. p. 63; HAYATA Fl. Mont. Formos. p. 64.

HAB. Sanchōki, Tamsui, Mankinshō.

DISTRIB. Tropical Asia and Africa; South China.

#### 4. *Sloanea* LINN.

***Sloanea hongkongensis*** HEMSL. in HOOK. Ic. Pl. XXVII. (1900) t. 2628; HAYATA Materials for a Flora of Formosa p. 49.

DISTRIB. Hongkong.

I have seen a specimen with a very spinous fruit in Formosa, which specimen is apparently the same as the present species which I have seen in the Herbarium at Hongkong. The plant is, however, not yet represented in the Tōkyō herbarium.

#### 5. *Echinocarpus* BLUME.

***Echinocarpus dasycarpus*** BENTH. in Proc. LINN. Soc. V. suppl. II. p. 72; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 400; HENRY List Pl. Formos. p. 24; MATSUM. et HAYATA Enum. Pl. Formos. p. 63.

HAB. Soobonsho, Mankinshō.

DISTRIB. Eastern Himalaya.

#### 6. *Elæocarpus* LINN.

*Dichotomous Key to the Formosan Species.*

- (1) Leaves obtusely serrate or crenate. (2)



- Leaves acutely dentately serrate. .... *Elæocarpus lanceæfolius*.  
 (2) Petals entire. .... *E. japonicus*.  
 Petals fimbriate. .... *E. decipiens*.

**Elæocarpus lanceæfolius** ROXB. Fl. Ind. II. p. 598; BENTH. Fl. Hongk. p. 42; FORBES et HEMSL. Ind. Fl. Sin. I. p. 95; WIGHT Ic. Pl. Ind. Or. t. 65; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 402; HENRY List Pl. Formos. p. 24; MATSUM. et HAYATA Enum. Pl. Formos. p. 66.

HAB. Kelung, Mankinshō, South Cape.

DISTRIB. Eastern Himalaya.

**Elæocarpus japonicus** SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 165; MIQ. Prol. Fl. Jap. p. 205; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 67; FORBES et HEMSL. Ind. Fl. Sin. I. p. 95; MAXIM. in ENGL. Bot. Jahrb. VI. p. 61; ITō et MATSUM. Tent. Fl. Lutch. p. 349; MATSUM. et HAYATA Enum. Pl. Formos. p. 66.

HAB. Kussaku, Wantan.

DISTRIB. Japan.

**Elæocarpus decipiens** HEMSL. Ind. Fl. Sin. I. p. 94; HENRY List Pl. Formos. p. 24; ITō et MATSUM. Tent. Fl. Lutch. p. 349; MATSUM. et HAYATA Enum. Pl. Formos. p. 65; HAYATA Fl. Mont. Formos. p. 64.

HAB. Biōritsu; Sensuiko, Mankinshō.

DISTRIB. South China and the Loo-choo islands.

## Linaceæ.

### *Linum* LINN.

**Linum usitatissimum** LINN.; MATSUM. et HAYATA Enum. Pl. Formos. p. 66.

HAB. Sōzan, (cultivated).



## Malpighiaceæ

*Conspectus of the Formosan Genera.*

- (1) Calycine glands minute or 0. .... *Tristellateia*. 1  
 Calycine gland 1, large, adnate to the pedicel. .... *Hiptage*. 2

1. *Tristellateia* THOUARS.

***Tristellateia australasica*** A. KICH.; BENTH. Fl. Austral. I. p. 287;  
 HOOK. f. Fl. Brit. Ind. I. p. 418; HENRY List Pl. Formos. p. 24; MATSUM.  
 in Tōkyō Bot. Mag. XII. (1898) p. 2; MATSUM. et HAYATA Enum. Pl.  
 Formos. p. 67.

HAB. Kōshūn: Galanbi.

DISTRIB. From Singapore to New Ireland.

2. *Hiptage* GÆRTN.

***Hiptage Madablota*** GÆRTN.; DC. Prodr. I. p. 583; BENTH. Fl.  
 Hongk. p. 49; HOOK. f. Fl. Brit. Ind. I. p. 418; FORBES et HEMSL. Ind. Fl.  
 Sin. I. p. 96; HENRY List Pl. Formos. p. 24; MATSUM. in Tōkyō Bot.  
 Mag. XV. p. 56; MATSUM. et HAYATA Enum. Pl. Formos. p. 67.

*Gærtnera racemosa* ROXB. Fl. Ind. II. p. 368.

*Banisteria benghalensis* LINN. Sp. Pl. ed-2, p. 611.

HAB. Pachina, Taichū: Biōritsu, Shintiku, Hokkōkei, Soobonsha, Ke-  
 lung, Tamsui, Takow.

DISTRIB. Tropical India and Malaya.

## Zigophyllææ.

*Tribulus* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Leaflets elongately oblong, acute at the apex. .... *Tribulus terrestris*.  
 Leaflets broadly oblong, obtuse at the apex. .... *T. cistoides*.



**Tribulus terrestris** LINN. Sp. Pl. ed-2, p. 554; DC. Prodr I. p. 703; LOUR. Fl. Cochinch. ed-WILLD. p. 331; FRANCHET Pl. David. p. 62; WIGHT Ic. Pl. Ind. Or. t. 98; EDGEW. et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 423; FORBES et HEMSL. Ind. Fl. Sin. I. p. 97; HENRY List Pl. Formos. p. 24; DIELS Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 420; MATSUM. et HAYATA Enum. Pl. Formos. p. 67.

HAB. Shōkwa, Takow, Bōkotō.

DISTRIB. Widely diffused in the tropical and temperate regions; central China.

**Tribulus cistoides** LINN. HOOK. f. Fl. Brit. Ind. I. p. 423; FORBES et HEMSL. Ind. Fl. Sin. I. p. 97; HAYATA Materials for a Flora of Formosa p. 50.

HAB. Pratas, by. T. KAWAKAMI, 1907, July.

DISTRIB. Throughout the warmer regions of both hemispheres.

## Geraniaceæ.

### *Conspectus of the Formosan Genera.*

- (1) Flowers regular or nearly so. (2)
  - Flowers irregular. .... *Impatiens*. 4
- (2) Leaves simple. .... *Geranium*. 1
  - Leaves compound (3)
- (3) Herbs, fruits capsular. (4)
  - Trees, fruits berried. .... *Averrhoa*. 5
- (4) Capsules loculicidal, valves cohering with the axis,
  - leaves tri-foliate. .... *Oxalis*. 2
  - Capsules loculicidal, valves usually separating from
    - the axis to the base, leaves pinnate. .... *Biophytum*. 3

### 1. *Geranium* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves ternately cleft, segments pinnatilobed. . . *Geranium Robertianum*.



Leaves palmately 5-lobed, lobes laciniately many-lobed. . . *G. uniflorum*.

**Geranium Robertianum** LINN.; DC. Prodr. I. p. 644; MAXIM. Mém. Biol. X. p. 613; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 307, (var. *glabrum*); HOOK. f. Fl. Brit. Ind. I. p. 432; DIELS Fl. Centr. Chin. p. 419; LEDEB. "Fl. Alt. III. p. 233"; HAYATA Fl. Mont. Formos. p. 64.

HAB. Taitō; Bunshisekisha.

DISTRIB. Southern parts of Japan, China throughout, and westward to Europe.

This exactly agrees with the Japanese form.

**Geranium uniflorum** HAYATA Fl. Mont. Formos. p. 65; and Materials for a Flora of Formosa p. 50. Stem 1-2 ft. high, erect or patent, glabrous, upwards, pilose, branches articulately nodose. Leaves long petioled, piloso-pubescent, petioles 2-4 cm. long, blades broadly orbicular or pentagonous in outline 5-7 cm. in diameter, deeply 5-parted, segments acuminate, pinnatifid inciso-serrate, stipules oblong, abruptly acuminate, 1 cm. long, somewhat pilose outside. Flowers axillary or subterminal, long pedunculate, 1-flowered, 2-bracteate, peduncles 5-6 cm. long, pubescent, bracts subulate, opposite, nearly 1 cm. long. Sepals 5, elliptical, 12 mm. long, 5 mm. broad, outside distinctly 5-nerved, pilose on the nerves, aristately acute at the apex, glabrous inside. Petals 5, obovate, cuneate, entire, 2 cm. long or longer, rounded at the apex, emarginate, base ciliate above the claw. Glandules 5. Stamens 10, 2-seriate, filaments dilated at the base, shortly ciliate, anthers oblong deciduous. Ovary pilose. Capsule-lobes oblong, pilose, 5 mm. long, 2½ mm. broad, tails 14 mm. long.

HAB. Mt. Morrison.

Near *G. aconitifolium* and also *G. collinum* A. DC. but differs from the former by not branched peduncles, and from the latter in having much broader stipules.

## 2. *Oxalis* LINN.

### *Dichotomous Key to the Formosan Species.*

Leaflets broadly obtriangular slightly 2-lobed, lobes spreading, acute at the base. . . . . *O. Griffithii*.



Leaflets much more rounded than the other, slightly 2-lobed at the apex, lobes very short less spreading, much thinner..... *O. corniculata*.

***Oxalis Griffithii*** EDGEW. et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 436; S. MOORE in Journ. Bot. (1875) p. 230; FORBES et HEMSL. Ind. Fl. Sin. I. p. 99; DIELS Fl. Centr. Chin. p. 420; HAYATA Fl. Mont. Formos. p. 66.

HAB. Suizan, Mt. Morrison, Arizan.

DISTRIB. Eastern Himalaya and Khasia mountains; also in central China.

***Oxalis corniculata*** LINN. Sp. Pl. ed-2, p. 623; LOUR. Fl. Cochinch. ed-WILLD. p. 350; DC. Prodr. I. p. 692; BENTH. Fl. Hongk. p. 56, et Fl. Austral I. p. 301; BAKER et MOORE in Journ. Linn. Soc. XVII. p. 380; FRANCHET Pl. David p. 65; HANCE in WALP. Ann. III. p. 839; THUNB. Fl. Jap. p. 187; HOOK. et ARN. Bot. Beech. Voy. p. 261; ROXB. Fl. Ind. II. p. 457; WIGHT Ic. Pl. Ind. Or. t. 18; MIQ. Prol. Fl. Jap. p. 271; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 69; EDGEWORTH et HOOK. f. Fl. Brit. Ind. I. p. 436; FORBES et HEMSL. Ind. Fl. Sin. I. p. 99; HENRY List Pl. Formos. p. 24; DIELS Fl. Centr. Chin. p. 420; PALIBIN Conspect. Fl. Koreæ I. p. 48; MATSUM. et HAYATA Enum. Pl. Formos. p. 68.

HAB. Common in the island, Kelung, Kōtōshō, Pachina, Bankinsing.

DISTRIB. Common all over the World.

### 3. *Biophytum* DC.

***Biophytum sensitivum*** DC. Prodr. I. p. 690; HOOK. f. Fl. Brit. Ind. I. p. 436; FORBES et HEMSL. Ind. Fl. Sin. I. p. 100; HENRY List Pl. Formos. p. 24; MATSUM. et HAYATA Enum. Pl. Formos. p. 69; HAYATA Materials for a Fl. Formos. p. 50.

*Oxalis sensitiva* LINN. Sp. Pl. ed-2, p. 622; LOUR. Fl. Cochinch. ed-WILLD. p. 350.

HAB. Akō: Bongarisha, by G. NAKAHARA, Sept. 1905, (No. 544).

OBSERV. A very graceful herb, about 30 cm. high; leaves gathered on the top of the stem, abruptly pinnate, 6-7 cm. long, pinnules 20-30,



obliquely oblong, 1 cm. long. Flowers many on a long peduncle which is projected from the center of congested leaves.

DISTRIB. Generally in the tropical regions of the World.

#### 4. *Impatiens* LINN.

***Impatiens uniflora*** HAYATA Fl. Mont. Formos. p. 66. Erect herb, nearly 30 cm. high, few branched, flexuous towards the apex, stems stramineous, glabrous (except apex). Leaves approximately arranged towards the apex, shortly petiolate, blades oblong, elliptical or lanceolately elliptical, nearly 8 cm. long,  $2\frac{1}{2}$  cm. broad, caudately acuminate at the apex, cuneate at the base, attenuate to the petioles, margin serrulate, serras setose, incurved. Flowers solitary larger, rosy terminal or in upper axils, peduncles slender, nearly 4 cm. long, 1- rarely 2- flowered, naked, bracteolate on the middle, bracteoles minute, incurved. Sepals 3, 2-lateral ones oblique, ovate, acuminate, entire, 6 mm. long,  $2\frac{1}{2}$  mm. broad, the back one long saccate, acute at the apex, mouth  $1\frac{1}{2}$  cm. in diameter, base abruptly turning to a short spur, (which is incrassate at the apex and slightly 2-lobed),  $3\frac{1}{2}$  cm. long from the base up to the apex of spurs. Petals: standard as half long as wings, broadly reniformed cristate at the middle and back, and attenuate to a horn-like process which is recurved and maculate; wings in outline elliptical  $2\frac{1}{2}$  cm. long, 2-lobate on the upper side, exterior basal lobe broad, apical lobe longer and oblong. Stamens 5, filaments unequal, shorter, nearly 4 mm. long, complanate appendiculate at the middle, anthers ovate, apiculate, coherent with pistils; cells introrsely dehiscent. Ovary oblong, 4 mm. long, stigma sessile, 5-dentate. Capsules elongate, 2 cm. long, 5 valvate, valves elastically split, column persistent. Seeds long elliptical scarcely longer than 2 mm., coats glabrous minutely papillose under microscope.

HAB. Tozan, Arizan, Mt. Morrison.

#### 5. *Averrhoa* LINN.

***Averrhoa Carambola*** LINN. Sp. Pl. ed-2, p. 428; DC. Prodr. p. 689; LOUR. Fl. Cochinch. ed-WILLD. p. 354; BENTH. Fl. Hongk. p. 56; EDGE-



WORTH et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 439; FORBES et HEMSL. Ind. Fl. Sin I. p. 100; HENRY List Pl. Formos. p. 24; MATSUM. et HAYATA Enum. Pl. Formos. p. 69.

HAB. Reigaryō, Shintiku, Pachina, Takow.

## Rutaceæ.

### *Conspectus of the Formosan Genera.*

- (1) Herbs. .... *Bœnninghausenia*. 1  
Shrubs or trees. (2)
- (2) Flowers usually polygamous. (3)  
Flowers hermaphrodite. (7)
- (3) Ovary deeply 3-5-lobed. (4)  
Ovary entire. (5)
- (4) Leaves opposite. .... *Evodia*. 2  
Leaves alternate. { Perianth simple. .... *Zanthoxylum*. 3<sup>1</sup>  
                          { Perianth double. .... *Fagara*. 3<sup>2</sup>
- (5) Stem prickly. .... *Toddalia*. 4  
Stem unarmed. (6)
- (6) Leaves 1-3-foliate, petals 4, stamens 8. .... *Acronychia*. 5  
Leaves simple, petals and stamens 4-5 each. .... *Skimmia*. 6
- (7) Ovules solitary or twin in each cell. (8)  
Ovules many in each cell. .... *Citrus*. 11
- (8) Style very short, persistent. .... *Glycosmis*. 7  
Style joined on the top of the ovary, deciduous. (9)
- (9) Leaves pinnate. (10)  
Leaves 1-foliate. .... *Atalantia*. 10
- (10) Filaments linear-subulate. .... *Murraya*. 8  
Filaments dilated below. .... *Clausena*. 9

### 1. *Bœnninghausenia* REICHB.

*Bœnninghausenia albiflora* REICHB. "Conspect. Reg. Veg. p. 259;  
FRANCHET Pl. David. p. 66; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 71;



MIQ. Prol. Fl. Jap. p. 209; ENGL. et PRANT. Nat. Pfl.-fam. III.-4, p. 150; FORBES et HEMSL. Ind. Fl. Sin. I. p. 102; DIELS Fl. Centr. Chin. p. 423; HAYATA in Tōkyō Bot. Mag. XX. p. 52; HAYATA Fl. Mont. Formos. p. 67.

HAB. Tappansha.

DISTRIB. Himalaya to Japan and China; recently found in Luzon.

## 2. *Evodia* FORST.

*Dichotomous Key to the Formosan Species.*

- (1) Leaves trifoliolate. (2)  
     Leaves pinnate, leaflets many. .... *E. meliæfolia*.
- (2) Leaflets lanceolate or ovately lanceolate. .... *E. triphylla*.  
     Leaflets larger, oblong or obovately oblong ..... *E. Roxburghiana*.

***Evodia meliæfolia*** BENTH. Fl. Hongk. p. 58; HOOK. f. Fl. Brit. Ind. I. p. 490; FORBES et HEMSL. Ind. Fl. Sin. I. p. 104; HENRY List Pl. Formos. p. 24; DIELS Fl. Centr. Chin. p. 423; MATSUM. et HAYATA Enum. Pl. Formos. p. 69; HAYATA Fl. Mont. Formos. p. 68.

*Megabotrya meliæfolia* HANCE in WALP. Ann. II. p. 259.

*Evodia glauca* MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 23.

HAB. Taitō, Dakunsha, Okaseki, South Cape.

DISTRIB. Southern China and southern parts of Japan.

***Evodia triphylla*** DC. Prodr. I. p. 724; HOOK. f. Fl. Brit. Ind. I. p. 488; FORBES et HEMSL. Ind. Fl. Sin. I. p. 104; HENRY List Pl. Formos. p. 25; ITÔ et MATSUM. Tent. Fl. Lutch. p. 353; MATSUM. et HAYATA Enum. Pl. Formos. p. 70.

*Evodia Lamarckiana* BENTH. Fl. Hongk. p. 59.

*Zanthoxylum Lamarckianum* CHAMP. et SCHL. in Linnæa V. p. 58.

*Zanthoxylum pteleæfolium* CHAMP.; WALP. Ann. IV. p. 418.

*Lepta triphylla* LOUR. Fl. Cochinch. ed- WILLD p. 104.

HAB. Unring, Tōseikaku, Suiteiryō, South Cape, Mankinshō.

DISTRIB. Bonin, Loo-choo, Philippines, Hongkong, Malaya and India.



**Evodia Roxburghiana** BENTH. Fl. Hongk. p. 59; Hook. f. Fl. Brit. Ind. I. p. 487; HENRY List Pl. Formos. p. 25; MATSUM. et HAYATA Enum. Pl. Formos. p. 70.

*Evodia triphylla* BEDDOME Fl. Sylvat. Anal. Gen. t. VI. f. 2.

*Evodia Marambong* MIQ. Ann. Mus. Bot. Lugd.-Bat. III. p. 244.

*Fagara triphylla* ROXB. Fl. Ind. I. p. 416.

*Zanthoxylon Roxburghianum* CHAMP. in Linnæa V. p. 58.

*Zanthoxylon zeylanicum* DC. Prodr. I. p. 723.

HAB. Hikaku, Kelung, Taihoku, Keibi, Shinkōgai, Suisha, Shūshūgai

DISTRIB. Sumatra and Java.

### 3<sup>1</sup>. *Zanthoxylum* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaflets much larger than the other, spines complanate... *Z. planispinum*.  
 Leaflets smaller, spines not complanate. .... *Z. setosum*.

**Zanthoxylum planispinum** SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 138; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 73; FRANCHET Pl. David. I. p. 67; MAXIM. in Mém. Biol. XII. p. 428; PALIBIN Conspect. Fl. Koreae I. p. 51; MATSUM. et HAYATA Enum. Pl. Formos. p. 71.

HAB. Maruyama.

DISTRIB. Japan, Corea, central China.

**Zanthoxylum setosum** HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. I. p. 107; MATSUM. et HAYATA Enum. Pl. Formos. p. 71.

HAB. Shintiku.

DISTRIB. East China; Kiang-si.

### 3<sup>2</sup>. *Fagara* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaflets small, obovate or oblong, shortly and obtusely cuspidate at the apex..... *F. cuspidata*.



Leaflets large, oblong or obovate, acute or acuminate or sometimes obtuse or even rounded at the apex, but never cuspidate. (2)

- (2) Leaflets beneath prickly on the midrib. .... *F. nitida*.

Leaflets not prickly. (3)

- (3) Leaflets ovately lanceolate, acuminate. .... *F. ailanthoides*.

Leaflets obovate, rounded at the apex, but rarely very shortly cuspidate towards the rounded apex. .... *F. integrifoliola*.

**Fagara cuspidata** (CHAMP.) ENGL. in ENGL. et PRANTL. Nat. Pfl.-fam. III-4, p. 118; MATSUM. et HAYATA Enum. Pl. Formos. p. 71.

*Zanthoxylum cuspidatum* CHAMP.; WALP. Ann. IV. p. 415; BENTH. Fl. Hongk. p. 58; FORBES et HEMSL. Ind. Fl. Sin. I. p. 106; HENRY List Pl. Formos. p. 25.

HAB. Kashinro, Tamsui.

DISTRIB. China; Hongkong.

**Fagara nitida** ROXB. Fl. Inn. I. p. 419; ITÔ et MATSUM. Tent. Fl. Lutch. p. 355; MATSUM. et HAYATA Enum. Pl. Formos. p. 72.

*Fagara piperita* LOUR. Fl. Cochinch. ed-WILLD. p. 101.

*Zanthoxylum nitidum* DC. Prodr. I. p. 727; BENTH. Fl. Hongk. p. 58; MAXIM. in Mém. Biol. VIII. p. 2; FORBES et HEMSL. Ind. Fl. Sin. I. p. 106; HENRY List Pl. Formos. p. 28.

HAB. Tamsui, Kélung, Taihoku, Maruyama, Tamsui, Heiteishō, Takow.

DISTRIB. Southern China.

**Fagara ailanthoides** ENGL. in ENGL. et PRANTL. Nat. Pfl.-fam. III-4 p. 118.

*Zanthoxylum ailanthoides* SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 138; MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 22; FORBES et HEMSL. Ind. Fl. Sin. I. p. 105; HENRY List Pl. Formos. p. 25; MATSUM. et HAYATA Enum. Pl. Formos. p. 71.

HAB. Tamsui, Bankinsing.

DISTRIB. Japan, China.

**Fagara integrifoliola** MERRILL Fl. of the Lamao Forest Reserve, in



Philip. Journ. Sci. Bot. I. p. 68; HAYATA Materials for a Flora of Formosa p. 51.

HAB. Kōtōshō, coll. T. KAWAKAMI and G. NAKAHARA, March, 1906, (No. 1064).

DISTRIB. The Philippines.

The plant is exactly referable to this species, so far as the description is concerned. The tree yields a soft woolly substance which densely covers the radical parts of the plant.

FAGARA EMARGINELLA ENGL. et PRANTL; MATSUM. et HAYATA Enum. Pl. Formos. p. 72.

Our specimen are imperfect, and the identification is very doubtful.

#### 4. *Toddalia* JUSS.

***Toddalia aculeata*** PERS.; DC. Prodr. II. p. 83; BENTH. Fl. Hongk. p. 59; HOOK. f. Fl. Brit. Ind. I. p. 497; FORBES et HEMSL. Ind. Fl. Sin. I. p. 108; HOOK. et ARN. Bot. Beech. Voy. p. 261; BED. Fl. Sylv. Ind. Gen. XLII. t. VI. f. 4; HENRY List Pl. Formos. p. 25; ITÔ et MATSUM. Tent. Fl. Lutch. p. 356; DIELS Fl. Centr. Chin. p. 424; MATSUM. et HAYATA Enum. Pl. Formos. p. 72.

*Scopolia aculeata* SM.; WILLD. Sp. Pl. I. p. 1115; ROXB. Fl. Ind. I. p. 616.

HAB. Tōseikaku, Suiteiryō, Niki, Kōshūn.

DISTRIB. In the Tropics of the Old World.

#### 5. *Acronychia* FORST.

***Acronychia laurifolia*** BLUME; HOOK. f. Fl. Brit. Ind. I. p. 498; FORBES et HEMSL. Ind. Fl. Sin. I. p. 108; HENRY List Pl. Formos. p. 25; MATSUM. et HAYATA Enum. Pl. Formos. p. 73.

*Cyminosma pedunculata* et *C. resinosa* DC. Prodr. I. p. 722; BENTH. Fl. Hongk. p. 60.

*Acronychia Cyminosma* F. MUELL. Fragm. Phyt. Austral. I. p. 27, (in nota); HANCE in Journ. Linn. Soc. XIII. p. 101.



*Jambolifera pedunculata* et *J. resinosa* LOUR. Fl. Cochinch. ed-WILLD.  
pp. 283 et 285.

HAB. Kelung.

DISTRIB. India, Malaya.

Leaves simple or very rarely trifoliate.

### 6. *Skimmia* THUNB.

*Skimmia japonica* THUNB. Fl. Jap. pp. 4 et 62; FRANCH. et SAVAT.  
Enum. Pl. Jap. II. p. 311; DC. Prodr. II. p. 18; ITÔ et MATSUM. Tent.  
Fl. Lutch. p. 357; MERRILL in Philip. Journ. Sci. I. Supp. Bot. p. 201;  
HAYATA Fl. Mont. Formos. p. 68.

HAB. Morrison, Tōzan.

DISTRIB. Himalaya, central China and Japan throughout; recently  
found in the Philippine islands.

### 7. *Glycosmis* CORREA.

*Glycosmis pentaphylla* CORREA; DC. Prodr. I. p. 538; OLIV. in  
Journ. Linn. Soc. V. Suppl. II. p. 37; BENTH. Fl. Austral. I. p. 367; KURZ  
in Journ. Bot. (1876) p. 36; HOOK. f. Fl. Brit. Ind. I. p. 108; FORBES et  
HEMSL. Ind. Fl. Sin. I. p. 109; HENRY List Pl. Formos. p. 25; ITÔ et  
MATSUM. Tent. Fl. Lutch. p. 358; MATSUM. et HAYATA Enum. Pl. Formos.  
p. 73.

*Glycosmis citrifolia* LINDL.; BENTH. Fl. Hongk. p. 51.

*Glycosmis arborea* DC. Prodr. I. p. 538.

*Limonia parvifolia* SIMS. in Bot. Mag. t. 2416.

*Limonia arborea* ROXB. Fl. Ind. II. p. 381; AIT. Hort. Kew. ed-2, III.  
p. 43; Bot. Mag. t. 2074.

HAB. Horisha, Kelung, Kōketsuzan, Shizangan, Chōkachiraisha.

DISTRIB. Tropical Asia, Polynesia, Australia.



8. *Murraya* LINN.*Key to the Formosan Species.*

Leaflets smaller obovate obtuse or retused at the apex cuneate at the base. .... *M. exotica*.

Leaflets larger, oblong, acuminate or shortly cuspidate at the apex, obtuse at the extremity, acute at the base. .... *M. Koenigii*.

***Murraya exotica*** LINN.; DC. Prodr. I. p. 537; BENTH. Fl. Hongk. p. 50; FORBES et HEMSLEIGH. Ind. Fl. Sin. I. p. 109; HOOK. et ARN. Bot. Beech. Voy. p. 260; WIGHT Ic. Pl. Ind. Or. t. 96; BENTH. Fl. Austral. I. p. 369; OLIV. in Journ. Linn. Soc. V. Suppl. 2, (1861) p. 28; HOOK. f. Fl. Brit. Ind. I. p. 502; MAXIM. in Mém. Biol. XII. p. 429 (1886); HENRY List Pl. Formos. p. 25; ITÔ et MATSUM. Tent. Fl. Lutch. p. 352; MATSUM. et HAYATA Enum. Pl. Formos. p. 47; HAYATA Fl. Mont. Formos. p. 68.

*Chalcas paniculata* et *C. Japonensis* LOUR. Fl. Cochinch. ed-WILLD. pp. 331 et 332.

HAB. Sharyôtô, Hikaku, Kelung, Shizangan, Taitôchô, Kwarenkô, Hokuto, Taiton, Pachina, Kôkô.

DISTRIB. In tropical and subtropical Asia; southern China, Hongkong, India; Australia, Polynesia.

***Murraya Koenigii*** SPRENG.; OLIV. in Journ. Linn. Soc. V. Suppl. II. p. 29; WIGHT Ic. Pl. Ind. Or. t. 13; ROXB. Fl. Ind. II. p. 375; HOOK. f. Fl. Brit. Ind. I. p. 503; MATSUM. et HAYATA Enum. Pl. Formos. p. 75.

HAB. Suiteiryô, Niki.

DISTRIB. India.

9. *Clausena* BURM.*Dichotomous Key to the Formosan Species.*

(1) Leaflets larger obliquely ovate. .... *Clausena Wampi*.

Leaflets small, angustate, lunulata. .... *C. lunulata*.



**Clausena Wampi** OLIVER in Journ. Linn. Soc. V. Suppl. II. p. 34; BENTH. Fl. Hongk. p. 50; HOOK. f. Fl. Brit. Ind. I. p. 505; FORBES et HEMSL. Ind. Fl. Sin. I. p. 110; HENRY List Pl. Formos. p. 25; ITÔ et MATSUM. Tent. Fl. Lutch. p. 360; MATSUM. et HAYATA Enum. Pl. Formos. p. 75.

*Cookia punctata* RETZ; DC. Prodr. I. p. 537.

*Quinaria lansium* LOUR. Fl. Cochinch. ed-WILLD. p. 334.

HAB. Shintiku, Bankinsing.

DISTRIB. China, India, Malaya.

**Clausena lunulata** HAYATA Materials for a Flora of Formosa p. 51. Branches fuscous, cinereo-punctate, pubescent. Leaves pinnate, lanceolate in outline, 25 cm. long, 8 cm. broad, 31-41-foliolate, leaflets largest on the middle, lunulate, 4 cm. long, 12 mm. broad, obtuse or retuse at the apex, strongly oblique at the base, broader on the superior side, narrower and acuminate on the inferior side, obscurely crenate or entire, glabrous or pubescent on the costa, petiolules 2 mm. long. Panicles terminal, 20 cm. long, 7 cm. broad, flowers ternately arranged at the apex of the branches of the panicles. Calyx 5-dentate, teeth truncate; petals not yet known.

*Clausena excavata* HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 75.

HAB. Kōshūn; Kachiraisha.

In the Enumeratio Plantarum Formosanarum, I referred this plant to *C. excavata*, thinking that it might be a small form of that species. On examining a set of several specimens collected in different parts of the island, I have found that the plant is always of the same constant form and is quite different from the type of the named species in many points but especially in its leaves which are in the latter species very much larger, attaining the size of even 3-4-times those of the Formosan plant.

# 10. *Atalantia* CORREA.

**Atalantia buxifolia** OLIVER in Journ. Linn. Soc. V. Suppl. II. p. 26; BENTH. Fl. Hongk. p. 51; FORBES et HEMSL. Ind. Fl. Sin. I. p. 110; HENRY



List Pl. Formos. p. 25; MATSUM. et HAYATA Enum. Pl. Formos. p. 75.

*Limonia bilocularis* ROXB. Fl. Ind. II. p. 377.

*Atalantia monophylla* HOOK. et ARN. Bot. Beech. Voy. p. 172.

HAB. Tainan; Hōsan, Takow, Mankinshō.

DISTRIB. China: Kiangsi, Hongkong, Hainan.

### 11. *Citrus* LINN.

**Citrus Aurantium** LINN. Sp. Pl. ed-2, p. 1100; DC. Prodr. I. p. 539; LOUR. Fl. Cochinch. ed-WILLD. p. 569; ROXB. Fl. Ind. III. p. 392; FORBES et HEMSL. Ind. Fl. Sin. I. p. 110; HENRY List Pl. Formos. p. 26; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 74; HOOK. f. Fl. Brit. Ind. I. p. 515; ITŌ et MATSUM. Tent. Fl. Lutch. p. 361; DIELS Fl. Centr. Chin. p. 425; MATSUM. et HAYATA Enum. Pl. Formos. p. 76.

HAB. Tamsui.

DISTRIB. Perhaps spontaneous in northern China.

Var. **Decumana** BONAVIA, ex ENGL. in ENGL. et PRANTL Nat. Pfl.-fam. III. pt-4, p. 198; ITŌ et MATSUM. Tent. Fl. Lutch. p. 362; MATSUM. et HAYATA Enum. Pl. Formos. p. 76.

*Citrus decumana* LOUR. Fl. Cochinch. ed-WILLD. p. 571; WILLD. Sp. Pl. III. p. 1428; ROXB. Fl. Ind. III. p. 393; DC. Prodr. I. p. 539; HOOK. f. Fl. Brit. Ind. I. p. 516; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 74; FORBES et HEMSL. Ind. Fl. Sin. I. p. 111; HENRY List Pl. Formos. p. 26;

*Citrus Aurantium* β. *sinensis* LINN. Sp. Pl. ed-2, p. 1101.

HAB. Fukkishō, Daibōhōshō.

**Citrus nobilis** LOUR. Fl. Cochinch. ed-WILLD. p. 569; DC. Prodr. I. p. 540; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 74; FORBES et HEMSL. Ind. Fl. Sin. I. p. 111; ITŌ et MATSUM. Tent. Fl. Lutch. p. 360; MATSUM. et HAYATA Enum. Pl. Formos. p. 77.

*Citrus deliciosa* TENORE; WALP. Rep. II. p. 804.

HAB. Taiton.



**Citrus japonica** THUNB. Fl. Jap. p. 292, et Ic. Jap. t. 15; SIEB. et ZUCC. Fl. Jap. I. p. 35; MIQ. in Ann. Mus. Bot. Ludg-Bat. II. p. 83; FORBES et HEMSL. Ind. Fl. Sin. I. p. 111; MATSUM. et HAYATA Enum. Pl. Formos. p. 77.

*Citrus Aurantium* var. *japonica* HOOK. f. in Bot. Mag. t. 6128.

*Citrus incermis* ROXB. Fl. Ind. III. p. 393.

HAB. Taition, Kōkeinaishō.

DISTRIB.

## Simarubeæ.

### *Conspectus of the Formosan Genera.*

- (1) Ovules solitary in each cell, leaves compound. .... *Brucea*. 1  
 Ovules 2 in each cell; leaves simple. .... *Suriana*. 2

### 1. *Brucea* MILL.

***Brucea sumatrana*** ROXB. Fl. Ind. I. p. 467; DC. Prodr. II. p. 88; BENTH. Fl. Hongk. p. 60; MIQ. Fl. Ind. Bat. II. p. 702; BENTH. in HOOK. f. Fl. Brit. Ind. I. p. 521; FORBES et HEMSL. Ind. Fl. Sin. I. p. 112; HENRY List Pl. Formos. p. 26; MATSUM. et HAYATA Enum. Pl. Formos. p. 77.

*Gonius amarissimus* LOUR. Fl. Cochinch. ed.-WILLD. p. 809.

HAB. Hikaku, Pachina, Takow.

DISTRIB. From Assam and Malaya, to Australia and the Philippines.

### 2. *Suriana* LINN.

***Suriana maritima*** LINN. DC. Prodr. II. p. 91; HOOK. f. Fl. Brit. Ind. I. p. 522; HAYATA Materials for a Flora of Formosa p. 52.

HAB. Pratas.

DISTRIB. On the sea-shores of the Tropics.



## Burseraceæ.

*Canarium* LINN.

**Canarium album** RÆNSCH.; DC. Prodr. II. p.80; HANCE in Journ. Bot. 1871, p. 39; ENGL. in DC. Monogr. Phanerog. IV. p. 149; FORBES et HEMSL. Ind. Fl. Sin. I. p. 113; HAYATA Materials for a Flora of Formosa p. 52.

HAB. Toroku: Rinkihō.

DISTRIB. Cochinchina and southern China.

## Meliaceæ.

*Conspectus of the Formosan Genera.*

- |  |                    |
|--|--------------------|
| (1) Stamens united into a tube. (2)        |                    |
| Stamens distinct. ....                     | <i>Cedrela</i> . 4 |
| (2) Leaflets toothed .....                 | <i>Melia</i> . 1   |
| Leaflets entire. (3)                       |                    |
| (3) Anthers 5, isomerous. ....             | <i>Aglaia</i> . 2  |
| Anthers 6-10, flowers diplostemonous. .... | <i>Amoora</i> . 3  |

1. *Melia* LINN.

**Melia Azedarach** LINN. Sp. Pl. ed.-2, p. 550; DC. Prodr. I. p. 621; ROXB. Fl. Ind. II. p. 395; FRANCHET Pl. David. p. 68; MIQ. in Ann. Mus. Bot. Lugd.-Bat. IV. p. 5, et Prol. Fl. Jap. p. 212; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 75; C. DC. Monogr. Phanerog. I. p. 451; WIGHT Ic. Pl. Ind. Or. t. 160; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 544; Bot. Mag. t. 1066; FORBES et HEMSL. Ind. Fl. Sin. I. p. 113; HENRY List Pl. Formos. p. 26; ITÔ et MATSUM. Tent. Fl. Lutch. p. 365; MATSUM. in Tōkyō Bot. Mag. XV. p. 54; DIELS Fl. Centr. Chin. p. 426; MATSUM. et HAYATA Enum. Pl. Formos. p. 78.



*Melia japonica* G. DON.; WALP. Rep. p. 373.

*Melia sempervirens* SW.; ROXB. Fl. Ind. II. p. 395.

HAB. Tamsui, Suiteiryō, Niki, Ringaryō, South Cape.

DISTRIB. China and India, often cultivated in the warm regions.

## 2. *Aglaiia* LOUR.

### *Dichotomous Key to the Formosan Species.*

(1) Leaves lepidote. (2)

Leaves not lepidote.....*A. odorata*.

(2) Leaflets smaller, obovate, shortly cuspidate at the apex, cuneate at the base. ....*A. elæagnoidea*. var. *formosana*.

Leaflets large, oblong or obovate, acute at the apex or obtuse at both ends.....*A. Roxburghiana*.

***Aglaiia elæagnoidea*** BENTH. Fl. Austral. V. p. 383; C. DC. Monogr. Phanerog. I. p. 611.

var. ***formosana*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 78.

Leaves 10–15 cm. long, 3–5 foliolate, leaflets obovate, 4–5 cm. long, 2 cm. broad, petiolules  $\frac{1}{2}$  –  $\frac{2}{3}$  cm. long. Panicles very long, slender, 20–30 cm. long. Flowers small, 1 mm. in diameter. Fruits ovoid, 1 cm. in diameter.

HAB. Chōkachiraisha, Kōshūn, Kōgō.

***Aglaiia odorata*** LOUR. Fl. Cochinch. ed.-WILLD. p. 216; DC. Prodr. I. p. 537; WIGHT Ic. Pl. Ind. Or. t. 511; HOOK. et ARN. Bot. Beech. Voy. p. 174, t. 34; MIQ. in Ann. Mus. Bot. Lugd.-Bat. IV. p. 48; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 554; C. DC. Monogr. Phanerog. I. p. 602; MAXIM. in Mém. Biol. XII. (1886) p. 429; FORBES et HEMSL. Ind. Fl. Sin. I. p. 114; HARMS in ENGL. et PRANTL Nat. Pfl.-fam. III. pt.-4, p. 298, fig. 138; HENRY, List Pl. Formos. p. 26; ITÔ et MATSUM. Tent. Fl. Lutch. p. 366; MATSUM. in Tōkyō Bot. Mag. XV. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 79.

*Camunium chinense* ROXB. Fl. Ind. I. p. 636.



HAB. Tamsui, Takow, Bankinsing.

DISTRIB. China, Malay Peninsula and Archipel. to India.

**Aglaia Roxburghiana** BEDD.; MIQ. in Ann. Mus. Bot. Lugd.-Bat. IV. p. 41; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 555; C. DC. Monogr. Phanerog. I. p. 604; BED. Fl. Sylvat. t. 130; HENRY List Pl. Formos. p. 26; MATSUM. in Tōkyō Bot. Mag. XV. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 79.

*Aglaia Spanoghei* BLUME ex MIQ. in Ann. Mus. Bot. Lugd.-Bat. IV. p. 41.

*Milnea Roxburghiana* WILLD. et ARN.; WIGHT Ic. Pl. Ind. Or. t. 166.

HAB. Kōtōshō: South Cape.

DISTRIB. India, Malaya, Ceylon.

### 3. *Amoora* ROXB.

**Amoora Rohituka** W. et ARN.; HIERN, in HOOK. f. Fl. Brit. Ind. I. p. 559; HANCE in Journ. Bot. (1879) p. 10; C. DC. Monogr. Phanerog. I. p. 581; FORBES et HEMSL. Ind. Fl. Sin. I. p. 114; HENRY List Pl. Formos. p. 26; MATSUM. et HAYATA Enum. Pl. Formos. p. 80.

HAB. South Cape.

DISTRIB. India, Malaya and the Philippines.

### 4. *Cedrela* LINN.

**Cedrela sinensis** A. JUSS.; WALP. Rep. I. p. 436; C. DC. Monogr. Phanerog. I. p. 743; FRANCHET Pl. David. p. 68; FORBES et HEMSL. Ind. Fl. Sin. I. p. 114; MATSUM. et HAYATA Enum. Pl. Formos. p. 80.

HAB. Taihoku.

DISTRIB. Japan and northern China.



## Olacineæ.

1. *Mappia* JACQ.

**Mappia ovata** MIERS; MAST. in HOOK. f. Fl. Brit. Ind. I. p. 589;  
TRIMEN Handb. Fl. Ceyl. I. p. 262.

var. **insularis** MATSUM. in Tōkyō Bot. Mag. XV. p. 55; MATSUM. et  
HAYATA Enum. Pl. Formos. p. 80.

HAB. Kōtōshō.

2. *Schœpfia* SCHREB.

**Schœpfia** sp. MATSUM. et HAYATA Enum. Pl. Formos. p. 81. (specimen  
sterile)

HAB. Kashinro, Kōtōshō.

## Illicineæ.

*Ilex* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Leaves entire. (2)  
Leaves more or less serrate or toothed. (3)
- (2) Leaves larger, 4 cm. long, obtuse at the apex, oblong. .... *Ilex rotunda*.  
Leaves smaller, 2 cm. long, obovate, shortly cuspidate and retused at  
the apex, cuneate at the base. .... *Ilex goshiensis*.
- (3) Leaves tricuspidate on the margin, and spiny at the apex of the points.  
..... *I. bioritsensis*.  
Leaves serrate or crenulate, not spiny. (4)
- (4) Leaves ovate, longer than 5 cm. (5)  
Leaves ovate or obovate, smaller than 4 cm. (8)
- (5) Leaves elongately oblong or lanceolate. (6)  
Leaves ovate, broadly oblong. (7)



- (6) Leaves lanceolate, not cuspidate. .... *I. parvifolia*.  
 Leaves elongately oblong, distinctly cuspidate. .... *I. formosana*.  
 (7) Leaves smaller and thinner. .... *I. Kusanoi*.  
 Leaves larger and thicker. .... *I. taiwaniana*.  
 (8) Leaves obovate, obtuse at the apex. .... *I. nokoensis*.  
 Leaves ovate or lanceolate, acute at the apex. (9)  
 (9) Leaves broadly ovate, shortly cuspidate, thinner. .... *I. asprella*.  
 Leaves lanceolately ovate, acuminate at the apex. .... *I. taisanensis*.

***Ilex asprella*** CHAMP.; BENTH. Fl. Hongk. p. 65; MAXIM. Coriar. Illic. Monochas. in Mém. Acad. Sc. Pétersb. 7<sup>e</sup> série, XXIX. (1881) p. 49; FORBES et HEMSL. Ind. Fl. Sin. I. p. 115; HENRY List Pl. Formos. p. 26; MATSUM. et HAYATA Enum. Pl. Formos. p. 81.

*Prinos asprellus* HOOK. et ARN. Bot. Beech. Voy. p. 176, t. 36.

HAB. Kōshūn, Daibōhōshō, Tōseikaku, Holisha, Pachina, Maruyama, Sōzan, Kōkei, Tamsui, Kelung, South Cape.

DISTRIB. China: Kiangsi, Hongkong.

***Ilex bioritsensis*** HAYATA Materials for a Flora of Formosa p. 53. Branches strong, straight; bark cinerascens, branchlets straight, divaricate, triquetrous. Leaves alternate, shortly petiolate, thick coriaceous, obovately rhomboid,  $3\frac{1}{2}$  cm. long, 2 cm. broad, margin 1-2-spinosely-dentate on both sides, central lobes triangular, acute at the apex or strongly aristate, aristas straight, lateral lobes acute, strongly aristate, rounded at the base or cordate, polished above, pallid below, costas and veins slightly impressed above, slightly elevated beneath, petioles 3 mm. long, nigricant. Drupes axillary, solitary, sessile, obovoid, 8 mm. long, obtuse at the apex (sepals persistent, triangular,) irregularly minutely punctate and slightly 2-3 cornute. Stones 2, dorsally compressed, convex on the back, nearly 8-sulcate, face flat, nearly 6-sulcate, 5 mm. long, 4 mm. broad.

HAB. Biōritsu: Taizan, by T. KAWAKAMI and U. MORI, Oct. 1908, (No. 7185).

Very like *Ilex Pernyi* FRANCH. var. *Manipurensis* LÆS.; but differs from it in the shape of the drupes in which there are always two stones.



**Ilex formosana** MAXIM. Coriar. Ilic. Monochas. in Mém. Acad. Sc. Pétersb. 7<sup>e</sup> série. XXIX. (1881) p. 46; FORBES et HEMSL. Ind. Fl. Sin. I. p. 116; HENRY List Pl. Formos. p. 27; MATSUM. et HAYATA Enum. Pl. Formos. p. 81; HAYATA Materials for a Flora of Formosa p. 54.

HAB. Kōketsuzan, Bankinsing, Uraisha.

DISTRIB. An endemic plant.

OBSERV. Branches blackish; leaves elliptical, acute at the base, acuminate or cuspidate at the apex, obtuse at the very tip, 7-8 cm. long, 2-3 cm. broad, margin obscurely crenulate, veins not very distinct on the upper surface, reticulated and dotted on the under surface, somewhat pale beneath, petioles about 1 cm. long. Flowers on a very short raceme, almost contracted to a cluster.

**Ilex goshiensis** HAYATA Materials for a Flora of Formosa p. 54. Branches strong, cinerascens, branchlets fusco-rubescens, angulate. Leaves alternate, petiolate, coriaceous, obovately oblong or oblong, 26 mm. long, 16 mm. broad, retusely acute at the apex, quite entire, opaque above, veins not visible, very pallid beneath, venose, petioles 4 mm. long. Drupes clustered at the axils of the leaves, peduncles 5 mm. long, pedicels 3 mm. long, globose, 4 mm. in diameter, fusco-rubescens with 4-sepals at the base.

HAB. Shintiku: Goshizan.

Near *Ilex Championi* LÆS.; but differs from it in having shortly cuspidate leaves. The leaves of *I. Championi* are very rounded or even emarginate at the apex. It is also near *Ilex memeyclifolia* CHAMP. from which it differs in having leaves which are retused at the apex. There is in the Herbarium at Tōkyō a specimen from the Loo-choo islands which has been identified with *I. Hanceana* MAXIM. by Dr. T. ITŌ in his "Tent. Fl. Lutch. p. 367." The specimen is very like, or even the same as, the plant just described, and I have wondered if the Loo-chooan plant be really identical with *I. Hanceana*. As is described by MAXIMOWICZ in his "Coriar. Ilic. Monoch. p. 33," *I. Hanceana* has "Cymulæ ♂ breve pedunculatæ, 5-6-floræ, petiolum bis vel ter superantes, pedicelli calyce æquilongi, flores 4-meri circ. linam longi. Calyx puberulus, lobis ciliatis ovatis." But, in the Loo-



chooan plant, we find "flores umbellati, umbellis cymose 5-6-fasciculatis, pedunculis umbellarum 5-6 mm. longis, petiolum æquantibus, pedicellis florum circ. 3 mm. longis florem 2-plo superantibus."\* In comparing the above descriptions, we see clearly that the Loo-chooan plant is not identical with MAXIMOWICZ's species. As to the identification of the Loo-choo plant with the present one, I am not as yet in a position to decide it. I can only add that they are very similar.

**Ilex integra** THUNB. Fl. Jap. p. 77; DC. Prodr. II. p. 16; MAXIM. in Mém. Acad. Sc. Péters. 7<sup>e</sup> série XXIX. (1881) p. 41; SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 148; MIQ. Prol. Fl. Jap. p. 269; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 77; FORBES et HEMSL. Ind. Fl. Sin. I. p. 116; ITÔ et MATSUM. Tent. Fl. Lutch. p. 368; PALIBIN Conspect. Fl. Koreæ I. p. 52; MATSUM. et HAYATA Enum. Pl. Formos. p. 81.

*Prinos integra* HOOK. et ARN. Bot. Beech. Voy. p. 261.

HAB. Exact locality is not known.

DISTRIB. Japan, Corea and China.

**Ilex Kusanoi** HAYATA Materials for a Flora of Formosa p. 55. Branches rugose, atro-purpurascens, branchlets slender, cinerascens, angulate. Leaves petiolate, alternate, chartaceous-membranaceous, oblong or oblongly ovate, or obovate, slightly oblique, 5 cm. long, 3 cm. broad, obtuse at the apex, or shortly acuminate, or slightly cuspidate, or obtusely acute, shortly aristate at the extremity, acute at the base, obscurely crenulate on the margin, aristate at the apex of the teeth, nearly entire near the base. Flowers 2-3-4 clustered at the axils, long pedunculate, peduncles slender, 18 mm. long, perulate at the base, perules minute, subulate. Flowers most likely hermaphrodite. Sepals 5, rounded, 1 mm. long, persistent, margin ciliolate. Corolla 5-lobate or sometimes 6-lobate, 3 mm. long, lobes rounded, 2 mm. long, tubes 1 mm. long. Stamens 5, rarely 6, affixed on the tube of the corolla, 1 mm. long, anthers triangular, cordate,  $\frac{1}{2}$  mm. long, acute at the apex, filaments dilated. Ovary globose, 2 mm. long (including style), style short, stigma

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\* The description above referred to has been drawn up by myself from a specimen from the Loo-choo Archipelago, which is referred to *I. Hanceana* MAXIM. by Dr. T. ITÔ.



subglobose, 5-lobate. Drupes globose, 3 mm. in diameter, shortly acute, stigma 5-lobed.

HAB. Taitō, by S. KUSANO, 1908, July.

The present plant bears some resemblance to the Japanese *Ilex macropoda* MIQ.; but the leaves of the Japanese plant are more or less hairy, while those of the Formosan are quite glabrous. Besides, the former has deciduous leaves, while the latter persistent ones. Also near *I. macrocarpa* OLIVE. but differs from it in having much smaller fruits; from *I. taiwaniana* HAYATA in having much thinner leaves and much larger flowers.

***Ilex nokōensis*** HAYATA Materials for a Flora of Formosa p. 56. Branches strong, cinerascens, lenticellate, slightly pilose, hairs nigricant, many-branched, branchlets divaricate, leafy, cinereo-rubescens, shortly hirsute. Leaves alternate, shortly petiolate, greenish, oblong, ovate or obovate,  $2\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. broad, roundly obtuse at the apex, or obtuse, sometimes callosomucronate, base acute or cuneately acute, margin upwards crenate, crenas somewhat callose at the apex, entire downwards costas, veins and veinlets impressed above, but slightly elevated below, petioles 2 mm. long.

HAB. Nōkōsan, at an elevation of 9000 ft., by T. KAWAKAMI and U. MORI, 1908, January, (No. 4582).

This is very like *Ilex crenata* THUNB., but differs from it in having impressed veins on the surface of the leaves, which are quite obtusely crenate on the margin. In *I. crenata*, the leaves are shortly aristate at the apex of the teeth on the margin. Moreover, the lowersurface of the leaves of the same species is minutely dotted, while that of the present plant is quite smooth, but never dotted. It also bears some resemblances to *I. luzonica* ROLFE, and also to *I. Thomsoni*; but differs from the former in having obovate or oblongo-ovate leaves which are crenate towards the apex, and from the latter in having callosobtusely (but not mucronately) crenate leaves. Those of *I. luzonica* ROLFE are usually oblong, more acutely or mucronately crenate from the base to the apex, while these are usually obovate, very obtusely crenate only towards the apex.



**Ilex parvifolia** HAYATA (Pl. XIX.) Materials for a Flora of Formosa p. 57. Branches slender, branchlets ferrugineo-tomentose. Leaves approximate, shortly petiolate, oblong, 12 mm. long, 6 mm. broad, coriaceous, obtuse at both ends or acute, aristately serrate, tomentose above on the costas, veins obscure on both sides, tomentose above. Flowers axillary, solitary, pedicellate, sepals 4, rounded, 1 mm. long. Drupes reddish, globose, 6 mm. in diameter, with 4 stones.

HAB. Mt. Morrison, Arizan.

Near *Ilex intricata* Hook. f.; but differs from it by the thinner, oblong, leaves, which are more or less aristately toothed on the margin. *I. intricata* has nearly obovate leaves, without aristate teeth.

**Ilex rotunda** THUNB. Fl. Jap. p. 77; DC. Prodr. II. p. 16; MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 106; HANCE in Journ. Bot. (1883) p. 296; SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 149; MIQ. Prol. Fl. Jap. p. 269; MAXIM. in Mém. Acad. Sc. Pétersb. 7<sup>e</sup> série, XXIX. (1881) p. 36; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 77; FORBES et HEMSL. Ind. Fl. Sin. I. p. 118; HENRY List Pl. Formos. p. 27; ITÔ et MATSUM. Tent. Fl. Lutch. p. 368; MATSUM. et HAYATA Enum. Pl. Formos. p. 82.

HAB. Hokuto, South Cape.

DISTRIB. Japan and China.

**Ilex taisanensis** HAYATA Materials for a Flora of Formosa p. 57. Branches cinerascens, rugulose longitudinally, branchlets straight, triquetrous towards the apex, shortly pubescent or subglabrous, reddish. Leaves alternate, long petiolate, chartaceo-coriaceous, oblong, or oblong-ovate, 37 mm. long, 15 mm. broad, acute at the apex, roundly obtuse at the base, margin remotely crenate, veins and veinlets inconspicuous on both sides, or very much slender, pallid beneath, petioles 1 cm. long, slightly pubescent. Drupes solitary on the axils of the leaves, long pedunculate, (peduncles 2 cm. long, 2-bracteolate midway, bracteoles lanceolate 2 mm. long), globose, 5-6 mm. in diameter, albo-punctate, or not punctate, with calyx at the base. Stones 3-5, somewhat compressed dorsally, convex on the back, acute at the apex, smooth, 4 mm. long.



HAB. Biōritsu: Rokujōtaisan.

Near *Ilex embelioides* Hook. f. which differs from the present plant in the leaves, which are more attenuate or cuspidate towards the apex. The leaves of this plant are acute at the apex, but neither attenuate nor cuspidate.

***Ilex taiwaniana*** HAYATA Materials for a Flora of Formosa p. 58. Branches ashy, glabrous. Leaves alternate, ovate, obtusely acute, obliquely acute at the base, mucronately serrate, distinctly venose on both sides, chartaceo-membranaceous. Flowers 3-5-clustered at the axils, clusters pedunculate, peduncles 5 mm. long. Sepals 5, rounded, 1 mm. long, petals 5, rotundate, 2 mm. long; stamens 5, introrse, rudiment of the ovary convex. Drupes globose, 4 mm. long, long pedunculate, (peduncles 2 cm. long), 10-sulcate with 5 stones.

HAB. Kwashōtō.

*species imperfectly known to me.*

***Ilex Mertensii*** MAXIM. var. ***formosæ*** LÆS.; HAYATA Materials for a Flora of Formosa p. 56.

HAB. South Cape, Dr. A. HENRY.

I have seen the plant at Kew. It is not yet represented in the Herbarium at Tōkyō.

***Ilex ardisioides*** LÆS. in "Nov. Act. Nat. Cur. LXXVIII.-I. (1901) p. 359; HAYATA Materials for a Flora of Formosa p. 53.

HAB. South Cape, Dr. A. HENRY!

I have seen the plant at Kew; it is not yet represented in the Herbarium at Tōkyō.

Celastrineæ.

*Conspectus of the Formosan Genera.*

(1) Fruits dehiscent. (2)

Fruits indehiscent. Ovary imperfectly 3-celled; fruits 1-celled,  
broadly 3-winged. .... *Tripterygium*. 3



- (2) Leaves opposite or verticillate. .... *Euonymus*. 1  
 Leaves alternate. .... *Celastrus*. 2

### 1. *Euonymus* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves opposite. (2)  
 Leaves verticillate. .... *E. Miyakei*. 3  
 (2) Leaves quite entire. .... *E. chinensis*. 7  
 Leaves more or less serrate. (3)  
 (3) Leaves lanceolate, cuspidate at the apex .... *E. Dielsiana*. 1  
 Leaves oblong or ovate. (4)  
 (4) Fruits glabrous. (6)  
 Fruits prickly. (5)  
 (5) Spines very short and many. .... *E. trichocarpus*. 6  
 Spines longer and fewer. .... *E. Spraguei*. 5  
 (6) Leaves obovate. .... *E. Tanakæ*. 4  
 Leaves oblong. .... *E. carnosus*. 2

1. *Euonymus Dielsiana* LÆSENER in ENGL. Jahrb. XXIX. (1900) p. 440, t. IV. L.; HAYATA Materials for a Flora of Formosa p. 58.

HAB. Suisha, Shūshūgai.

DISTRIB. Central China.

Sterile, branches straight, greenish, wrinkled lengthwise. Leaves subopposite or alternate, lanceolate or ovately lanceolate or oblong, acuminate at the apex, obtuse at the extremity, attenuate at the base, remotely serrate on the margin, entire downwards, whitish above (in a dried specimen), pallid below, 8-10 cm. long, 3-4 cm. broad, petioles 8 mm. long, veins and venules slightly elevate above, inconspicuous beneath.

I have compared the present plant with a Chinese specimen so labelled in the Herbarium at Kew, and found that the Formosan plant is, so far as sterile specimens are concerned, identical with it. In this, Mr. SPRAGUE concurs.

2. *Euonymus carnosus* HEMSLEY, in FORBES et HEMSL. Ind. Fl. Sin.



I. p. 118; HENRY List Pl. Formos. p. 27; MATSUM. et HAYATA Enum. Pl. Formos. p. 82.

HAB. Kelung.

**3. *Euonymus Miyakei* HAYATA** in MATSUM. et HAYATA Enum. Pl. Formos. p. 83, t. VII. Shrub subglabrous, branches tetragonous. Leaves ternate, petioled, obovate or elliptical, slightly acute or obtuse, at the apex attenuate at the base, 6-7 cm. long, 2.5-3 cm. broad, petioles short, 5 mm. long. Flowers patent, 1 cm. in diameter, loosely cymosely paniculate, terminal or axillary, bracteate, bract very short. Sepals 5, incurved, rounded. Petals 5, inserted under the disc, patent, margin fimbriate and recurved, orbicular, base shortly narrowed. Stamens 5, inserted above the disc, filaments complanate, subulate, anthers broadly didymous. Disc carnose, ample, broadly explanate, entire. Ovary immersed in the disc, and confluent with it, 5-celled; style short; ovules 2 in each cell.

HAB. Kôtōshō.

Resembles very much *E. javanicus* BL.; but the leaves of the present plant are always verticillate (ternate in almost all cases), while those of the Javan species are always opposite.

**4. *Euonymus Tanakæ* MAXIM.** in Mém. Biol. XII. (1886) p. 428; Itô et MATSUM. Tent. Fl. Lutch. p. 371.

HAB. Taiton.

DISTRIB. Japan, Bonin, Loo-choo.

**5. *Euonymus Spraguei* HAYATA** (Pl. XX) Materials for a Flora of Formosa p. 59. Branches terete, minutely papilloso-punctate, striate, fulvo-cinerascent, branchlets subtetragonous, sulcate, fulvo-fuscent, slender, divaricate. Leaves opposite, ovately oblong or oblong,  $6\frac{1}{2}$  cm. long, 3 cm. broad, (sometimes  $4\frac{1}{2}$  cm. long, 23 mm. broad) chartaceo-coriaceous, obtusely acute or obtusely acuminate at the apex, acute or rounded at the base, margin serrulate, teeth obtuse, pallid above, more pallid below, costas and veins slightly elevated above, but costas elevated below, and veins not conspicuous, petioles 8 mm. long, sulcate inside. Capsules cymosely arranged (cymes axillary, peduncles slender, 3 cm. long) broadly globose, 6 mm. in diameter,



2-4-lobate, 2-4-locular, truncate at the apex, echinate on the face, spines sometimes nearly 30, sometimes 5-6, recurved, 1-2 mm. long, styles persistent. Seeds quadrant-shaped, rubescent, 5 mm. long, smooth, testa coriaceous.

*Euonymus echinatus* T. ITÔ in ITÔ et MATSUM. Tent. Fl. Lutch. p. 371; HAYATA Fl. Mont. Formos. p. 69.

HAB. Mt. Morrison: Tōzan; Mushazan.

DISTRIB. Loo-choo.

When I mentioned the present plant in my "Fl. Mont. Formos.", I was merely comparing it with a Loo-choo plant which had been determined by Dr. T. ITÔ, and referred to *E. echinata* WALL. in his "Tent. Fl. Lutch. p. 371." As the Formosan plant is exactly identical with Dr. ITÔ's plant, I used the same name for my plant. While working here at Kew, I have compared with Mr. SPRAGUE the present plant with the type of the named species, and have found that they are clearly not identical. The former is easily distinguishable from the latter by many points, but especially by the very much fewer and much more slender spines on the fruit. In WALLICH's species, the spines are much more numerous and stronger. Our plant is very near *E. subsessilis* SPRAGUE (= *E. echinatus* LOUR.), but differs from it in having much fewer and more slender spines.

**6. *Euonymus trichocarpus*** HAYATA Fl. Mont. Formos. p. 69; Branchlets trichotomously divaricate, nearly tetragonous, glabrous. Leaves opposite, petiolate, petioles nearly 1 cm. long, semi-terete, blades oblong-elliptical, 6-7 cm. long, 4 cm. broad, apex obtuse or acute, base rounded or obtuse, rarely slightly narrowed, margin serrulate, serrulas obtuse, veins prominent on both sides. Cymes (on lateral branchlets) opposite, few-flowered. Flowers not known. Capsules depressingly globose, 6-7 mm. in diameter, shortly prickled, prickles 1 mm. long.

HAB. Mt. Morrison.

This plant resembles *E. echinatus* WALL.; but differs from it in having very short and dense spines on the fruits.



*Species imperfectly known to me.*

**7. *Euonymus chinensis*** LINDL.; MATSUM. et HAYATA Enum. Pl. Formos. p. 83.

**2. *Celastrus*** LINN.*Dichotomous Key to the Formosan Species.*

- (1) Leaves obovate, cuneate at the base. .... *C. diversifolius*.  
 Leaves ovate or rounded, not cuneate at the base. (2)
- (2) Leaves oblong, acute at the base. .... *C. articulatus*.  
 Leaves rounded, slightly cordate at the base. .... *C. Kusanoi*.

***Celastrus articulatus*** THUNB. Fl. Jap. p. 97; DC. Prood. II. p. 7; MAXIM. in Mém. Biol. XI. p. 200; FRANCHET Pl. David. p. 70; MIQ. Prol. Fl. Jap. p. 17; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 80; A. GRAY, Bot. Jap. p. 384; FORBES et HEMSL. Ind. Fl. Sin. I. p. 122; HENRY List Pl. Formos. p. 27; DIELS Fl. Centr. Chin. p. 446; PALIBIN Conspect. Fl. Koreæ I. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 84; HAYATA Fl. Mont. Formos. p. 70.

HAB. Taitō: Iryokukakusha.

DISTRIB. Central and northern China and Japan northward to Saghalien.

***Celastrus diversifolius*** HEMSLEY in FORBES et HEMSL. Ind. Fl. Sin. I. p. 123; HENRY List Pl. Formos. p. 27; ITÔ et MATSUM. Tent. Fl. Lutch. p. 374; MATSUM. et HAYATA Enum. Pl. Formos. p. 84.

*Gymnosporia diversifolia* MAXIM. in Mém. Biol. XI. p. 204; LÆS. in ENGL. Bot. Jahrb. XXX. (1902) p. 472.

*Celastrus Wallichiana* HANCE in Journ. Bot. (1878) p. 226?

*Catha Wallichii* DON; WALP. Rep. I. p. 532.

HAB. Taitōchō: Chihon, Tamari, Hinan, Rokuryō; Kōshūn, Takow, Bankinsing, South Cape.

DISTRIB. China, Hainan.

***Celastrus Kusanoi*** HAYATA Materials for a Flora of Formosa p. 60.



Scandent, branches fuscent, wrinkled lengthwise, lenticellate, branchlets divaricate. Leaves alternate petiolate, broadly globose, 8 cm. long, 9 cm. broad, rounded at the apex, shortly cuspidate, (tails 8 mm. long, obtuse,) broadly truncate or roundly cordate at the base, margin remotely obscurely serrate, entire near the base, chartaceous, petioles  $2\frac{1}{2}$  cm. long, sulcate inside. Capsules cymose (cymes axillary, peduncles 2 cm. long, shortly ternate) subglobose (styles persistent,) 3-valvately dehiscent, valves osseous, flavescent orbicular, shortly acute at the apex, crosswise wrinkled outside, seeds 2 in each cell. Seeds covered by reddish arils, obliquely cylindrical, slightly recurved,  $4\frac{1}{2}$  mm. long, 2 mm. broad, testa fusco-nigricant, rugose, minutely papillose, coriaceous.

HAB. Southern Formosa.

The present plant is near *C. articulatus*, but differs in having more rounded leaves and transversely wrinkled carpels when dried. The leaves are nearly rounded or slightly cordate at the base, shortly acute or nearly rounded at the apex, remotely serrulate on the margin, while those of *C. articulatus* are nearly obovate, acute or rounded but never cordate at the base. The carpels of the latter plant are not wrinkled but rather smooth even when dried.

### 3. *Tripterygium* Hook. f.

**Tripterygium Wilfordii** Hook. f. in BENTH. et Hook. Gen. Plant. I. p. 368; MAXIM. in Mém. Biol. XI. p. 206; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 125; HENRY List Pl. Formos. p. 27; PALIBIN Conspect. Fl. Koreae I. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 85.

*Tripterygium Bullockii* HANCE, in Journ. Bot. (1880) p. 259.

HAB. Maruyama, Taiton Kelung.

DISTRIB. Japan and China.

*Species imperfectly known to me.*

**Elæodendron japonicum** FRANCH. et SAVAT. MATSUM. et HAYATA Enum. Pl. Formos. p. 84.

HAB. Kōtōshō.



As the specimen is very imperfect, the identification is rather conjectural.

## Rhamneæ.

### *Conspectus of the Formosan Genera.*

- |     |  |  |   |  |                     |  |                     |                          |                      |
|-----|--|--|---|--|---------------------|--|---------------------|--------------------------|----------------------|
| (1) | Scandent shrubs. Fruits dry, 1-celled, 1-seeded. ....      | <i>Ventilago</i> . 1   |   |  |                     |  |                     |                          |                      |
|     | Erect shrubs or trees. (2)                                 |  |   |  |                     |  |                     |                          |                      |
| (2) | Fruits dry or fleshy drupes with one stone. (3)            |  |   |  |                     |  |                     |                          |                      |
|     | Fruits dry or fleshy of 3 pyrenes. (4)                     |  |   |  |                     |  |                     |                          |                      |
| (3) | Leaves prominently three-nerved.                           | <table border="0"> <tr> <td rowspan="3">{</td> <td>Fruits subglobose, expanding in rounded wing upwards. ....</td> <td><i>Paliurus</i>. 2</td> </tr> <tr> <td>Fruits carnosose globose, not expanding in wings. ....</td> <td><i>Zizyphus</i>. 3</td> </tr> <tr> <td>Leaves pinninerved. ....</td> <td><i>Berchemia</i>. 4</td> </tr> </table> | { | Fruits subglobose, expanding in rounded wing upwards. .... | <i>Paliurus</i> . 2 | Fruits carnosose globose, not expanding in wings. .... | <i>Zizyphus</i> . 3 | Leaves pinninerved. .... | <i>Berchemia</i> . 4 |
| {   | Fruits subglobose, expanding in rounded wing upwards. .... | <i>Paliurus</i> . 2  |   |  |                     |  |                     |                          |                      |
|     | Fruits carnosose globose, not expanding in wings. ....     | <i>Zizyphus</i> . 3  |   |  |                     |  |                     |                          |                      |
|     | Leaves pinninerved. ....                                   | <i>Berchemia</i> . 4   |   |  |                     |  |                     |                          |                      |
| (4) | Disk thin, lining the calyx-tube. ....                     | <i>Rhamnus</i> . 5   |   |  |                     |  |                     |                          |                      |
|     | Disk fleshy, filling the calyx-tube. (5)                   |  |   |  |                     |  |                     |                          |                      |
| (5) | Shrub spinose, leaves and branches opposite. ....          | <i>Sageretia</i> . 6   |   |  |                     |  |                     |                          |                      |
|     | Unarmed shrub, leaves alternate. ....                      | <i>Colubrina</i> . 7   |   |  |                     |  |                     |                          |                      |

### 1. *Ventilago* GÆRTN.

#### *Dichotomous Key to the Formosan Species.*

- |     |  |                       |
|-----|--|-----------------------|
| (1) | Leaves ovate or ovately lanceolate, longer than the other. . . . . | <i>V. leiocarpa</i> . |
|     | Leaves very much smaller, oblong or obovate. ....                  | <i>V. elegans</i> .   |

**Ventilago elegans** HEMSL. Ann. Bot. IX. p. 151; HENRY List Pl. Formos. p. 27; MATSUM. in Tōkyō Bot. Mag. XII. p. 21; MATSUM. et HAYATA Enum. Pl. Formos. p. 85.

HAB. Hinan, Apes Hill, Bankinsing.

DISTRIB. An endemic plant.

**Ventilago leiocarpa** BENTH. in Journ. Linn. Soc. V. p. 77; BENTH. Fl. Hongk. p. 67; LAWS. in HOOK. f. Fl. Brit. Ind. I. p. 631; FORBES et HEMSL. Ind. Fl. Sin. I. p. 125.



HAB. Bankinsing.

DISTRIB. Hongkong.

## 2. *Paliurus* JUSS.

***Paliurus ramosissimus*** POIR.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 126; HENRY List Pl. Formos. p. 27; MATSUM. in Tōkyō Bot. Mag. XII. p. 21; DIELS Fl. Centr. Chin. p. 457; MATSUM. et HAYATA Enum. Pl. Formos. p. 86.

*Paliurus Aubletia* SCHULTZ; DC. Prodr. II. p. 22; BENTH. Fl. Hongk. p. 66; FRANCHET Pl. David. p. 71; MAXIM. Rham. Or. As. p. 2.

*Aubletia ramosissima* LOUR. Fl. Cochinch. ed-WILLD. p. 348.

HAB. Kelung, Taihoku, Kinpōri, Tamsui.

DISTRIB. Central China and Japan.

## 3. *Zizyphus* JUSS.

***Zizyphus Jujuba*** LAM.; DC. Prodr. II. p. 21; HANCE in Journ. Bot. (1879) p. 10; FORBES et HEMSL. Ind. Fl. Sin. I. p. 126; HENRY List Pl. Formos. p. 27; MATSUM. in Tōkyō Bot. Mag. XII. p. 21.

*Rhamnus Jujuba* LINN. Sp. Pl. ed-2, p. 282; LOUR. Fl. Cochinch. ed-WILLD. p. 195.

HAB. Tainan, Nisōkō, Takow, Hōzan.

DISTRIB. Tropical Asia, Africa and Australia.

## 4. *Berchemia* NECK.

### *Key to the Formosan Species.*

Leaves much smaller, elliptical, rounded and emarginate at the apex,  
racemes shorter. .... *B. lineata*.

Leaves much larger, ovate, acute at the apex, racemes terminal, longer,  
many-branched. .... *B. racemosa*.

***Berchemia lineata*** DC. Prodr. II. p. 23; HOOK. et ARN. Bot. Beech. Voy. p. 177, t. 37; BENTH. Fl. Hongk. p. 67; HANCE in Journ. Linn. Soc. XIII. p. 115; HOOK. f. Fl. Brit. Ind. I. p. 638; SIEB. et ZUCC. Fl. Jap.



Fam. Nat. I. p. 147; MAXIM. Rham. Or. As. p. 6; FORBES et HEMSL. Ind. Fl. Sin. I. p. 127; HENRY List Pl. Formos. p. 27; MAKINO in Tōkyō Bot. Mag. X. p. 65; MATSUM. in Tōkyō Bot. Mag. XII. p. 22; ITŌ et MATSUM. Tent. Fl. Lutch. p. 376; DIELS Fl. Centr. Chin. p. 458; MATSUM. et HAYATA Enum. Pl. Formos. p. 87.

HAB. Shintiku, Hinan, Bōryō, Tamsui.

DISTRIB. Loo-choo, Hongkong, China, Himalaya.

**Berchemia racemosa** SIEB. et SUCC. Fl. Jap. Fam. Nat. I. p. 147; BENIH. Fl. Hongk. p. 67; MAXIM. Rham. Or. As. p. 5; FORBES et HEMSL. Ind. Fl. Sin. I. p. 127; HENRY List Pl. Formos. p. 27; DIELS Fl. Centr. Chin. p. 458; MATSUM. et HAYATA Enum. Pl. Formos. p. 87.

HAB. Kelung, Tamsui.

DISTRIB. Japan, China: Shensi Kiang-si, Fokien.

## 5. *Rhamnus* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Flowers shortly pedicellate. .... *R. formosana*.  
 Flowers elongately pedicellate. .... *R. Nakaharai*.

**Rhamnus Nakaharai** HAYATA Materials for a Flora of Formosa p. 61. Branches quite glabrous, nearly alternately divaricate. Leaves roundly ovate, rounded at the base or acute, acuminate at the apex or cuspidate, 7 cm. long,  $3\frac{1}{2}$  cm. broad, margin (except base and apex) crenulato-serrate, serras acuminate, recurved, veins 5-6 on each side, spreading out at an acute angle, slightly arched, membranaceous, petioles nearly 1 cm. long. Male flowers not yet known. Female flowers 5-6-clustered at the axils of the lower leaves, clusters slightly supra-axillary, connate to the branchlets, sometimes inserted at the height of 5-6 mm. above the axils, pedicels slender, a little longer than petioles, 1 cm. long, incrassate at the apex, reaching the calyx-tube. Calyx-lobes 3-times longer than the tube, nearly 3 mm. long, lanceolate, 3-nerved, callose at the apex. Rudiments of petals and stamens filiformed, very minute,  $\frac{1}{2}$  mm. long. Ovary globose, 1 mm. long, much exserted from



the tube, style cylindrical, 2 mm. long, 3-4-fid at the apex, style-branches  $1\frac{1}{2}$  mm. long, stigmatic, recurved, patent. Fruits not yet known.

*Rhamnus arguta* MAXIM. var. *Nakaharai* HAYATA Fl. Mont. Formos. p. 70.

HAB. Taichū.

The present plant is described in my paper "Fl. Mont. Formos." as representing a variety of *Rhamnus arguta* MAXIM. I have examined the type of the latter plant at Kew, and found that the difference between the type and the variety is so great that I think it better to raise up the latter to specific rank. The Formosan *Rhamnus* differs from the other in having slender flowers and longer styles, and especially in the supra-axillary inflorescence.

***Rhamnus formosana*** MATSUM. in MATSUM. et HAYATA Enum. Pl. Formos. p. 88. t. 8; HAYATA Materials for a Flora of Formosa p. 61.

The plant is very near *R. triquetra* WALL. and perhaps further study will prove that they are identical.

HAB. Nanshō, Biōritsu, Washa, Kurarusha.

## 6. *Sageretia* BRONGN.

***Sageretia theezans*** BRONGN. "in Ann. Sc. Nat. 1<sup>e</sup> série, X. p. 360"; BENTH. Fl. Hongk. p. 68; MAXIM. in Mém. Acad. Sc. Pétersb. 7<sup>e</sup> série, X. (1866) p. 20; HANCE in Journ. Linn. Soc. XIII. p. 115; DC. Prodr. II. p. 27; LAWS. in HOOK. f. Fl. Brit. Ind. I. p. 641; FORBES et HEMSL. Ind. Fl. Sin. I. p. 131; HENRY List Pl. Formos. p. 27; MATSUM. in Tōkyō Bot. Mag. XII. p. 22; ITŌ et MATSUM. Tent. Fl. Lutch. p. 377; PALIBIN Conspect. Fl. Koreæ I. p. 55; MATSUM. et HAYATA Enum. Pl. Formos. p. 88.

HAB. Takow, Suichōryū, Niki, South Cape.

DISTRIB. Loo-choo, Philippines, China, India and Corea.

## 7. *Colubrina* L. C. RICH.

***Colubrina asiatica*** BRONG.; BENTH. Fl. Austral. I. p. 413; LAWS. in HOOK. f. Fl. Brit. Ind. I. p. 642; HENRY List Pl. Formos. p. 27; MATSUM. in Tōkyō Bot. Mag. XII. p. 23; MATSUM. et HAYATA Enum. Pl. Formos. p. 89.



*Colubrina javanica* MIQ. Fl. Ind. Bat. I p. 649.

*Ceanothus asiaticus* LAM.; DC. Prodr. II. p. 30; ROXB. Fl. Ind. I. p.

615.

*Ceanothus capsularis* FORST.; DC. Prodr. II. p. 32.

*Rhamnus acuminata* COLEBR. in ROXB. Fl. Ind. I. p. 615.

HAB. South Cape.

DISTRIB. Loo-choo, India, Malaya, Africa, Australia, Polynesia.

## Ampelideæ.

### *Conspectus of the Formosan Genera.*

- |  |                  |
|--|------------------|
| (1) Scandent shrubs, usually having tendrils. .... | <i>Vitis</i> . 1 |
| Erect shrubs, destitute of tendrils. ....          | <i>Leea</i> . 2  |

### 1. *Vitis* LINN.

#### *Dichotomous Key to the Formosan Species.*

- |   |                            |
|---|----------------------------|
| (1) Leaves simple. (2)  |                            |
| Leaves pedately or pinnately parted. (6)  |                            |
| (2) Leaves lanate. (3)  |                            |
| Leaves glabrous. (4)  |                            |
| (3) Leaves lobulate on the margin, lobes rounded or obtuse.                           |                            |
| ..... <i>V. Labrusca</i> var. <i>Thunbergii</i> .                                     | 10                         |
| Leaves acutely dentate. ....  | <i>V. lanata</i> . 11      |
| (4) Leaves remotely, obscurely, minutely serrate. ....                                | <i>V. repens</i> . 12      |
| Leaves dentate, lobulate. (5)   |                            |
| (5) Leaves sinuately lobed, obtusely lobulate on the margin. <i>V. heterophylla</i> . | 6                          |
| Leaves dentate or serrate, teeth acute. ....  | <i>V. flexuosa</i> . 3     |
| (6) Leaves pedately 5-parted.....   | <i>V. japonica</i> . 8     |
| Leaves pinnately 3-5-or more parted. (7)  |                            |
| (7) Leaves pinnately 5-or more foliolate rarely 3. ....                               | <i>V. cantoniensis</i> . 4 |
| Leaves 3-foliolate. (8)   |                            |
| (8) Leaflets obliquely ovate, obtuse at the apex.....                                 | <i>V. formosana</i> . 5    |



- Leaflets ovate or lanceolate, acuminate at the apex. (9)
- (9) Leaflets acuminate 2-3-dentate (or leaves simple). .... *V. inconstans*. 7  
 Leaflets dentate, teeth many on both sides. (10)
- (10) Leaflets dentate; teeth acute. .... *V. dentata*. 1  
 Leaflets very obscurely dentate, or remotely serrate, teeth  
 or serras very minute. .... *V. triphylla*. 2

**1. *Vitis dentata*** HAYATA Materials for a Flora of Formosa p. 62. Branches fulvo-tomentose, (hairs patent, short,) or subglabrous, remotely leaved. Leaves trifoliate, petiolate, stipulate, broadly triangular in outline, membranaceous, 10 cm. long, 13 cm. broad, terminal leaflet oblong, 9 cm. long,  $4\frac{1}{2}$  cm. broad, obtusely acuminate at the apex, but roundly acute at the base, remotely dentate, (teeth ascendent shortly aristate), glabrous on both sides, petioles 5 mm. long, lateral leaflets oblique, oblong-ovate, obtusely acute at the apex, obliquely rounded at the base, acute on the upper side, rounded on the lower side,  $7\frac{1}{2}$  cm. long, 4 cm. broad, shortly petiolulate. petiolules 5 mm. long; petioles  $3\frac{1}{2}$  cm. long; stipules oblong-rounded, obtuse, 6 mm. long, affixed at the center, thick on the middle, maculate, membranaceous on the margin, nearly embracing the stem. Cymes opposite the leaves, 4 cm. long as broad, branchlets divaricate, peduncles and pedicels pubescent, hairs patent, bracts and bracteoles deciduous. Flower ♀: calyx complanate, lobes short triangular pilose, or nearly obsolete; corolla patent, 2 mm. long, lobes 5, valvate, ovately triangular, acute at the apex, abruptly acutely reflexed on the back, shortly connate. Ovary conical with styles 2 mm. long, contracted at the base, 5-4-cornute a little above the base, styles short, stigma 4-5-lobate.

HAB. Exact locality is not yet known.

Near *Vitis corniculata* BENTH., but differs from it in having acutely dentate leaves.

**2. *Vitis triphylla*** HAYATA Materials for a Flora of Formosa p. 63. Branches fuscent, hirsute, remotely foliate. Leaves trifoliate, triangular in outline, hirsute, terminal leaflets oblong-lanceolate, lateral leaflets longer 7 cm. long, 27 mm. broad, acuminate at the apex, obtusely rounded at the



base, remotely and obscurely serrate, (costas and veins slightly elevated on both surfaces), pallid below, tomentose on the costas, but hirsute on the blades, petiolules 15 mm. long, tomentose, lateral leaflets ovately oblong, oblique, acute at the apex, oblique at the base and rounded, acute on the upper side, rounded or cordate on the lower side,  $4\frac{1}{2}$  cm. long, 2 cm. broad, petiolules 3 mm. long; petioles 3 cm. long; stipules ovate-lanceolate 5 mm. long. Cymes opposite the leaves. Berry globose, 8 mm. in diameter, 1-seeded.

HAB. Shifun.

Very near *Vitis angustifolia* WALL., but differs from it in having more hairy, very obscurely and remotely serrulate, or nearly entire, leaves.

**3. *Vitis flexuosa*** THUNB. in Trans. Linn. Soc. II. p. 332; DC. Prodr. I. p. 634; MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 92; PLANCH. in DC. Monogr. Phanerog. V-2. pp. 347 et 611; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 83; FORBES et HEMSL. Ind. Fl. Sin. I. p. 132; HENRY List Pl. Formos. p. 27; DIELS Fl. Centr. Chin. p. 463; PALIBIN Conspect. Fl. Koreæ I. p. 56; MATSUM. et HAYATA Enum. Pl. Formos. p. 89.

*Vitis parvifolia* ROXB. Fl. Ind. I. p. 662; BENTH. Fl. Hongk. p. 53; LAWS. in Hook. f. Fl. Brit. Ind. I. p. 652.

HAB. Bankinsing.

DISTRIB. Corea, Japan and Hongkong.

**4. *Vitis cantoniensis*** SEEM.; BENTH. Fl. Hongk. p. 54; LAWS. in Hook. f. Fl. Brit. Ind. I. p. 663; FORBES et HEMSL. Ind. Fl. Sin. I. p. 131.

*Hedera hypoglauca* HANCE in WALP. Ann. II. p. 724

*Cissus cantoniensis* HOOK. et ARN. Bot. Beech. Voy. p. 175; WALP. Rep. X. p. 439.

*Cissus diversifolia* WALP. Rep. V. p. 377.

HAB. Precise locality is not known.

DISTRIB. Hongkong, Khasia.

**5. *Vitis formosana*** HEMSL. Ann. Bot. IX. p. 151; HENRY List Pl. Formos. p. 28; ITÔ et MATSUM. Tent. Fl. Lutch. p. 382; MATSUM. et HAYATA Enum. Pl. Formos. p. 90.



HAB. Hōsan, Shintiku, Bankinsing.

**6. *Vitis heterophylla*** THUNB. Fl. Jap. p. 103; DC. Prodr. I. p. 634; BENTH. Fl. Hongk. p. 53; MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 92; MIQ. Prol. Fl. Jap. p. 89; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 84; ENGL. in Bot. Jahrb. VI. p. 60; FORBES et HEMSL. Ind. Fl. Sin. I. p. 133; HENRY List Pl. Formos. p. 28; ITō et MATSUM. Tent. Fl. Lutch. p. 381; MATSUM. et HAYATA Enum. Pl. Formos. p. 90.

*Ampelopsis heterophylla* SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 197; PLANCH. in DC. Monogr. Phanerog. V. p. 455.

*Ampelopsis humulifolia* BUNGE; MAXIM. Prim. Fl. Amur. p. 480.

*Cissus brevipedunculata* MAXIM. Prim. Fl. Amur. p. 68.

HAB. Kelung, Shintiku, Tamsui, Biōritsu, Senton, Shōkwa, Shizangan; Kentanzan.

DISTRIB. Japan, Loo-choo, Hongkong, Corea, China, Manchuria.

**7. *Vitis inconstans*** MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 91; FORBES et HEMSL. Ind. Fl. Sin. I. p. 133; HENRY List Pl. Formos. p. 28; MATSUM. et HAYATA Enum. Pl. Formos. p. 91.

HAB. Shifun, Akō.

DISTRIB. Japan, China: Chili, Shantung, Kiangsi, Kwangtung.

**8. *Vitis japonica*** THUNB. Fl. Jap. p. 104; BENTH. Fl. Hongk. p. 54 (in nota); MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 81; FORBES et HEMSL. Ind. Fl. Sin. I. p. 134.

HAB. Taihoku, Kōtōshō, Bankinsing.

DISTRIB. Japan.

**9. *Vitis Labrusca*** LINN. Sp. Pl. ed-2, p. 293; WILLD. Sp. Pl. I. p. 1181; DC. Prodr. I. p. 634; PLANCH. in DC. Monogr. Phanerog. V-2, pp. 324 et 331; MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 93; FORBES et HEMSL. Ind. Fl. Sin. I. p. 134; HENRY List Pl. Formos. p. 28; var. **Thunbergii** FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 134, (in not.); ITō et MATSUM. Tent. Fl. Lutch. p. 379; MATSUM. et HAYATA Enum. Pl. Formos. p. 92.



*Vitis Thunbergii* SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 198; PLANCH. in DC. Monogr. Phanerog. V.-2, pp. 333 et 611; PALIBIN Conspect. Fl. Koreæ I. p. 56.

*Vitis Labrusca* THUNB. Fl. Jap. p. 103; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 134; ENGL. in Bot. Jahrb. VI. p. 60.

HAB. Kōshūn, Taiton, Fūki, Shajō, Kelung, Taihoku.

DISTRIB. Japan, northern China, Saghalien, northern America.

**10. *Vitis lanata*** ROXB. Fl. Ind. I. p. 660; LAWS. in HOOK. f. Fl. Brit. Ind. I. p. 651; BENTH. Fl. Hongk. p. 53; PLANCH. in DC. Monogr. Phanerog. V. p. 328; FORBES et HEMSL. Ind. Fl. Sin. I. p. 134; HENRY List Pl. Formos. p. 28; ITÔ et MATSUM. Tent. Fl. Lutch. p. 380; MATSUM. et HAYATA Enum. Pl. Formos. p. 92.

*Vitis Heyneana* REM. et SCHULT.; DC. Prodr. I. p. 634.

*Vitis indica* HOOK. et ARN. Bot. Beech. Voy. p. 260.

HAB. Taiton, Kelung.

DISTRIB. India, Hongkong, Loo-choo.

**11. *Vitis repens*** W. et A.; LAWS. in HOOK. f. Fl. Brit. Ind. I. p. 646; FORBES et HEMSL. Ind. Fl. Sin. I. p. 135; HENRY List Pl. Formos. p. 28; MATSUM. et HAYATA Enum. Pl. Formos. p. 92.

*Vitis cordata* WALL.; ROXB. Fl. Ind. I. p. 452; BENTH. Fl. Hongk. p. 54.

*Cissus repens* LAMK.; PLANCH. in DC. Monogr. Phanerog. V.-2, p. 504.

*Cissus glauca* ROXB. Fl. Ind. I. p. 425.

HAB. Tōseikaku, Takow.

DISTRIB. India and Malaya.

*Species excluded from the Flora of the island.*

***Vitis umbellata*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 93, (non HEMSL.)

***Vitis angustifolia*** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 90, (non HEMSL.)







- Calyx 5-parted, lobes imbricate, stamens nearly included. *Eulophia*. 6  
 (8) Stamens inserted on the disk. .... *Acer*. 8  
 Stamens inserted outside the disk. (9)  
 (9) Fruits capsular, dehiscent in valves. .... *Euscaphis*. 10  
 Fruits indehiscent, more or less fleshy. .... *Turpinia*. 11

### 1. *Cardiospermum* LINN.

**Cardiospermum Halicacabum** LINN. Sp. Pl. ed-2, p. 525; DC. Prodr. I. p. 601; BENTH. Fl. Hongk. p. 46, et Fl. Austral. I. p. 453; HANCE in Journ. Bot. (1878) p. 226; Bot. Mag. t. 1049; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 670; FORBES et HEMSL. Ind. Fl. Sin. I. p. 138; HENRY List Pl. Formos. p. 28; DIELS Fl. Cent. Chin. in ENGL. Bot. Jahrb. XXIX. p. 450; MATSUM. et HAYATA Enum. Pl. Formos. p. 93.

*Cardiospermum microcarpum* H.B.K.; HANCE in Journ. Linn. Soc. XIII. p. 101, et in Journ. Bot. (1878) p. 226; DC. Prodr. I. p. 601.

HAB. Tamsui, Kinpori, Takow.

DISTRIB. in the warm regions of Asia, Africa and Australia.

### 2. *Allophyllus* LINN.

**Allophyllus Cobbe** BLUME "Rumph. III. p. 131"; HOOK. f. Fl. Brit. Ind. I. p. 673; HAYATA Materials for a Flora of Formosa p. 64.

*Ornitrophe Cobbe* WILLD. Sp. Pl. II. p. 322.

*Schmiedelia Cobbe* DC. Prodr. I. p. 610; WIGHT Ic. t. 964.

*Ornitrophe serrata* BENTH. Fl. Austral. I. p. 455.

*Schmiedelia villosa* WIGHT Ic. t. 401.

*Schmiedelia Rheedii* WIGHT. Ic. t. 964.

HAB. Kōshūn, Pratas island.

DISTRIB. North Australia, Indian Archipelago.

### 3. *Kœlreuteria* LAXM.

**Kœlreuteria bipinnata** FRANCHET "Bullet. de la Sociét. Bot. de France XXXIII. p. 463, Pl. 29 et 30"; HENRY List Pl. Formos. p. 28;



DIELS Fl. Cent. Chin. p. 450; MATSUM. et HAYATA Enum. Pl. Formos. p. 94.

HAB. Bankinsing.

DISTRIB. Central and western China.

#### 4. *Sapindus* LINN.

**Sapindus Mukorossi** GÆRTN.; DC. Prodr. I. p. 608; SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 152; MIQ. Prol. Fl. Jap. p. 256; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 86; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 683; FORBES et HEMSL. Ind. Fl. Sin. I. p. 139; ITÔ et MATSUM. Tent. Fl. Lutch. p. 384; HENRY List Pl. Formos. p. 28; MATSUM. et HAYATA Enum. Pl. Formos. p. 94.

HAB. Shintiku, Horisha, Maruyama, Pachina, Kentanzan.

DISTRIB. Japan, Bonin, China, India.

#### 5. *Nephelium* LINN.

**Nephelium Litchi** CAMB.; BENTH. Fl. Hongk. p. 47; WIGHT Ic. Pl. Ind. Or. t. 43; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 687; FORBES et HEMSL. Ind. Fl. Sin. I. p. 139; MATSUM. et HAYATA Enum. Pl. Formos. p. 95.

*Litchi chinensis* SONNER.; RADLK. in ENGL. et PRANTL Nat. Pfl.-fam. III. pt.-5, p. 336; ITÔ et MATSUM. Tent. Fl. Lutch. p. 385.

*Dimocarpus Litchi* LOUR. Fl. Cochinch. ed-WILLD. p. 287.

*Nephelium dimocarpus* HOOK. f. et THOMS. ex HIERN in HOOK. f. Fl. Brit. Ind. I. p. 688.

*Scytalia Lichi* ROXB. Fl. Ind. II. p. 269.

HAB. Shintiku, Tamsui, Kagi, Pachina.

DISTRIB. in China Malaya and India; often cultivated.

#### 6. *Euphoria* COMM.

**Euphoria Longana** LAM.; DC. Prodr. I. p. 611; RADLK. in ENGL. et PRANTL Nat. Pfl.-fam. III. pt.-5, p. 359; ITÔ et MATSUM. Tent. Fl. Lutch. p. 384; MATSUM. et HAYATA Enum. Pl. Formos. p. 95.



*Nephelium Longana* CAMB.; Bot. Mag. t. 4096; BENTH. Fl. Hongk. p. 47; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 688; FORBES et HEMSL. Ind. Fl. Sin. I. p. 139; HENRY List Pl. Formos. p. 29.

*Dimocarpus Longan* LOUR. Fl. Cochinch. ed-WILLD. p. 288.

*Scytalia Longan* ROXB. Fl. Ind. II. p. 270.

HAB. Tamsui, Biōritsu, Maruyama, Shirin.

DISTRIB. China; in Hongkong; India.

### 7. *Pometia* J. R. et FORST.

*Pometia pinnata* J. R. et FORST "Char. Gen. p. 110. t. 55"; HOOK. f. Fl. Brit. Ind. I. p. 691, (in nota *P. tomentosa*); HAYATA Materials for a Flora of Formosa p. 64.

HAB. Taitō: Beirin, by T. KAWAKAMI and Z. KOBAYASHI, May, 1906, (No. 1522).

DISTRIB. Pacific islands.

### 8. *Acer* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves entire not lobed. (2)
  - Leaves more or less lobed or very slightly lobed, lobes serrate. (4)
- (2) Leaves ovate, broadest at the basal portion. ... *A. oblongum* var. *Itoanum*.  
(not in Formosa.)
  - Leaves obovate, broadest at the upper portion or lanceolately oblong. (3)
- (3) Leaves obovate, broadest at the upper portion. .... *A. oblongum*.
  - Leaves elongately oblong, acuminate at the apex... *A. albopurpurascens*.
- (4) Leaves very slightly lobed only on the margin; length of lateral lobes never exceeds  $\frac{1}{3}$  of that of leaves. (5)
  - Leaves lobed, length of lateral lobes exceeds  $\frac{1}{3}$  of that of leaves. (7)
- (5) Leaves slightly lobed on the margin, lateral lobes elongately caudate...  
..... *A. rubescens*.
  - Leaves slightly lobed, lateral lobes very obscure. (6)
- (6) Leaves obscurely crenulato-serrate. .... *A. caudatifolium*.



- Leaves minutely distinctly serrulate. .... *A. morrisonense*.  
 (7) Lobes of leaves usually 3, if more, less than 5, obtuse at the apex. (8)  
 Lobes of leaves 5, or more than 5, acute or acuminate at the apex. (9)  
 (8) Lobes serrate on the margin. .... *A. Tutcheri* var. *Shimadai*.  
 Lobes entire on the margin or nearly so. . . *A. trifidum* var. *formosanum*.  
 (9) Leaves 7-lobed. .... *A. duplicatoserratum*.  
 Leaves 5-lobed. (10)  
 (10) Lobes lanceolate. .... *A. serrulatum*.  
 Lobes ovately triangular. .... *A. Oliverianum* var. *Nakaharai*.

**Acer albo-purpurascens** HAYATA Materials for a Flora of Formosa 64. Branches rubro-purpurascens, terete, glabrous. Leaves elongately oblong or oblong lanceolate, 10 cm. long, 3 cm. broad, acuminate at the apex, (acumen linear, obtuse at the apex,  $1\frac{1}{2}$  cm. long), acute at the base, undulately entire, or entire, greenish above, glaucous below, obscurely 3-nerved, central nerve strong, rubescent, lateral nerves very much slender or rarely obsolete, primary lateral veins 7 on both sides, nearly straight, divaricate at an angle of  $50^\circ$ , nerves, veins and veinlets slightly elevated, reticulate above, prominently reticulate below, petioles  $1\frac{1}{2}$  cm. long, sulcate inside.

HAB. Giokusan.

Near *Acer lævigatum* WALL. and still more *A. Fargesii* and also some form of *A. oblongum* WALL., but quite easily distinguishable by the leaves, which are acuminate at the apex and acute at the base.

**Acer caudatifolium** HAYATA Materials for a Flora of Formosa p. 65. Branches fusco-cinereous, remotely leafy. Leaves ovately lanceolate, 8 cm. long,  $3\frac{1}{2}$  cm. broad, acuminate at the apex, cordate at the base, obscurely 3-lobed crenately serrate, obscurely 5-nerved, central nerve 3-times long as lateral nerves, and 7-times long as basal nerves, primary lateral veins 5 on both sides, divaricate from the costa at an angle of  $40^\circ$ , nerves, veins and veinlets elevated below, rubescent, pallid below, petioles  $1\frac{1}{2}$  cm. long, sulcate inside.

HAB. Giokusan.



The present *Acer* is very different from *A. caudatum* WALL., but very near *A. Davidi* FRANCH. This species is distinguishable from *A. Davidi* in leaves which have much larger serration.

***Acer duplicato-serratum*** HAYATA Materials for a Flora of Formosa p. 65. Branchlets glabrous. Leaves orbicular in outline, 7 cm. in diameter, palmately 7-lobed, lobes lanceolate acuminate, duplicato-serrate, terminal lobe 5 cm. long,  $1\frac{1}{2}$  cm. broad, the lowest lobes shorter,  $2\frac{1}{2}$  cm. long, petioles 2 cm. long.

HAB. Taitō: Botankei.

***Acer morrisonense*** HAYATA Materials for a Flora of Formosa p. 66. KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō, XXXII-1. p. 16, t. 7. Branchlets glabrous, atro-purpurascens. Leaves ovately cordate, 5-nerved, 8 cm. long, 5 cm. broad, slightly 3-lobed, lobes inconspicuous, obtuse, margin duplicato-serrate, acuminate at the apex or cuspidate, tails serrulate, petioles nearly 3 cm. long.

HAB. Mt. Morrison.

Near *Acer Davidi* FRANCHET, but differs from it in having the leaves with three lobes, two of which are very obscure. The present plant is also very like *A. laxiflorum*. There is at Kew a specimen exactly like this, labelled "*Acer* off *Hookeri*, China No. 218." It is very like *A. Hookeri*, but quite separable from it.

***Acer oblongum*** WALL. in DC. Prodr. I. p. 593; BENTH. Fl. Hongk. p. 47; MAXIM. in Mém. Biol. X. p. 599; PAX. in ENGL. Jahrb. VII. (1886) p. 208; FORBES et HEMSL. Ind. Fl. Sin. I. p. 141; HENRY List Pl. Formos. p. 29; MATSUM. et HAYATA Enum. Pl. Formos. p. 96.

HAB. Vaongoli, Chōkachiraisha, South Cape.

DISTRIB. The Himalayas.

***Acer trifidum*** HOOK. et ARN. Bot. Beech. Voy. p. 174; MAXIM. in Mém. Biol. X. p. 603; SIEB. et ZUCC. Fl. Jap. II. p. 81, t. 143; PAX. in ENGL. Bot. Jahrb. VII. (1886) p. 186; HANCE in Journ. Bot. (1873) p. 168; FORBES et HEMSL. Ind. Fl. Sin. I. p. 142.



var. **formosanum** HAYATA; LÉVEIL. in Bull. Soc. Bot. Franc. VI. (1906) p. 595; C. K. SCHNEIDER Ill. Handb. Laubh. II. (1907) p. 198; KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō. XXXII.-1, p. 33, t. 20.

*A. trifidum* var.? HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 97.

HAB. Kelung.

**Acer Oliverianum** PAX. var. **Nakaharai** HAYATA Materials for a Flora of Formosa p. 68. KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō XXXII.-1, p. 3. Branches pallid, glabrous. Leaves broadly orbicular in outline, 7 cm. long, 10 cm. broad, palmately 5-lobed, cordate at the base, lobes triangular, cuspidate, 3-3½ cm. long, 2 cm. broad or broader, margin serrulate, teeth acute, veins somewhat pilose below, but at last glabrous. Flowers cymose; cymes terminal on the apex of the two-leaved branchlets, 3-5 cm. long including peduncles, glabrous, 3-times branched, terminal pedicels 6 mm. long. Flowers ♀: sepals 5, roundly oblong, 2 mm. long, upwards hirsute on both sides, margin tomentosely ciliolate. Petals 5, rounded, 1¼ mm. long, margin obscurely denticulate or subentire, acute at the base. Stamens 7, rarely 5, 2 mm. long, filaments 1 mm. long, anthers oblong, 1 mm. long, obtuse at the apex, emarginate at the base. Ovary broadly dilate ⅔ mm. long, 2¼ mm. broad, hirsute, styles 2, entirely connate 2 mm. long, disc extrastaminal, incrassate, 7-5-lobate, lobes rounded. Carpels elliptico-oblong, cells 4 mm. long, wing dimidiately obovate, divaricate, 2½ cm. long including carpels, divaricate at an angle of 120°.

HAB. Chōsōkei.

The present variety differs from the type by the carpels which make an obtuse angle in their junction. Those of the type are arranged nearly in a line, i.e. in 180°.

**Acer Oliverianum** PAX. var. **Nakaharai** HAYATA form. **longistamina** HAYATA Materials for a Flora of Formosa p. 69. Flowers monœcious; cymes terminal at the apex of the two leaved branchlets. Fl. ♂. 4 mm. in diameter; sepals 5, rarely 6, oblong, somewhat pilose on both sides, 1½ mm. long. Petals 5, obovately oblong, 2 mm. long, rounded at the apex, margin obscurely denticulate or subentire, cuneate at the base, 2 mm. long. Stamens nearly



7.4 mm. long, filaments filiformed, apex very slender, but incrassate at the middle, 3 mm. long, anthers cordate, ovate, 1 mm. long, apex obtuse, cordate at the base. Rudiment of ovary minute with style 1 mm. long, very pilose, disks extra-staminal 7-8-parted, segments clavate, incrassate. Flowers ♀: calyx 5-6-parted, 2 mm. long, segments oblong, rounded at the apex. Petals the same as those of the male. Staminodes 0. Disks extra-staminal, 7-lobate. Ovary broadly dilate, pilose, styles short.

HAB. Ako, Kelung.

**Acer Oliverianum** PAX. var. **microcarpum** HAYATA Materials for a Flora of Formosa p. 69. Branches and leaves nearly the same as in the type. Flowers unknown. Carpels glabrous,  $2\frac{1}{2}$  cm. long, cells slightly nervose, wings oblong, 2- $2\frac{1}{2}$  cm. long, rounded at the apex, narrowed at the base, margin rounded on the exterior side, divaricate at an angle of  $110^{\circ}$ - $120^{\circ}$ .

HAB. Shintiku: Daitōge.

Differs from the type in having extremely small carpels. I have examined the fruits of the variety and ascertained that although they are extremely small, they are quite in mature state, having albumen and embryo. This differs also from the other variety *Nakaharai* in the shape of wings. In this variety, the wings are usually oblong, while in the other, they are always semi-oblong or cultriformed.

**Acer rubescens** HAYATA Materials for a Flora of Formosa p. 66. KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō XXXII-1, p. 21. Branchlets pallid, blackish in a dried specimen, leaves cordate in outline, or octagonal, slightly 5-lobed, lobes very short, cuspidate, terminal tail narrowed, linear, lateral ones serrulate, basal ones shortest, base cordate, margin (except tails) duplicately serrate, 9-10 cm. long, 7 cm. broad, coriaceous, long petioled, petioles 6-7 cm. long.

HAB. Taitō, Bataiankei.

There is at Kew a specimen very much like this. The specimen is labelled "*Acer capillipes* MAXIM. Japonia, Nippon, Prov. Shinano, 1864, leg. TSCHONOSKI." The present plant differs from it in having leaves with larger serration, and longer side lobes which are placed in a little upper portion.



Also very near *A. rufinerve* from which it is distinguishable by the leaves with more rounded or slightly cordate base; from *A. erosum* PAX. by the quite glabrous leaves.

**Acer serrulatum** HAYATA Materials for a Flora of Formosa p. 70. Branches terete, fusco-rubescens, glabrous, leafy, dilated at the insertion of the leaves. Leaves palmately 5-lobed, roundly cordate in outline,  $7\frac{1}{2}$  cm. long, 9 cm. broad, duplicately serrulate, lobes equal, 5-nerved, nerves divaricate at an angle  $60^\circ$ , central nerve nearly as long as the lateral nerves or a little longer,  $2\frac{1}{2}$  times long as the basal ones; terminal lobe lanceolate  $7\frac{1}{2}$  cm. long, 2 cm. broad, acuminate at the apex, lateral lobes and basal ones all the same, petioles  $2\frac{1}{2}$  cm. long, base slightly dilated.

HAB. Taitō: Bataiankei.

Near *Acer palmatum* THUNB.; but differs from it in the serration of the leaves.

**Acer Tutcheri** DUTHIE var. **Shimadai** HAYATA Materials for a Flora of Formosa p. 70; *Acer Oliverianum* PAX. subvar. *trilobatum* KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō XXXII.-1, p. 34, Fig. 2. Branches strong, terete, fusco-nigricant, lenticellate, branchlets divaricate, laterally compressed, a little dilated at the insertion of the leaves. Leaves opposite, petiolate, broadly rhomboid, 5 cm. long, 7 cm. broad, 3-lobate, serrulate, nearly entire near the base, lobes nearly equal, (rarely with smaller basal lobes), terminal lobe broadly triangular, margin straight,  $2\frac{1}{2}$  cm. long, 3 cm. broad, lateral lobes divaricate, straight on the upper side, but round at the base on the lower side, distinctly 3-nerved, central nerve 5 cm. long, lateral nerves  $4\frac{1}{2}$  cm. long, divaricate, petioles 4 cm. long, incrassate at the base. Cymes with fruits at the apex of 2-4-leaved branches, 7 cm. long (including peduncles) peduncles 2-3 cm. long. Carpels glabrous, cells ovoid,  $4\frac{1}{2}$  mm. long, slightly nervose, wings knife-shaped,  $1\frac{1}{2}$  cm. long, 6 mm. broad, recurved at the inner side, rounded at the apex, outer side straight, divaricate at an angle  $40^\circ$

HAB. Shintiku, by. T. KAWAKAMI and Y. SHIMADA, 1907, Sept. (No. 5657).



Very near the type, but differs from it in having much smaller carpels and wings which are much less divaricate.

*Species not yet Known to me.*

*Acer ovatifolium* KOIDZ. in Journ. Coll. Sci. Imp. Univ. Tōkyō. XXXII.-1, p. 16. t. 6.

*Acer Kawakamii* KOIDZ. l.c. p. 15, t. 5.

Although I have not yet seen the specimens, so far as I can ascertain from the descriptions and figures here referred, *A. ovatifolium* and *A. Kawakamii* are very similar. I suspect if they may not be one and the same species.

9. *Dodonæa* LINN.

*Dodonæa viscosa* LINN.; DC. Prodr. I. p. 616; HIERN in HOOK f. Fl. Brit. Ind. I. p. 697; HANCE in Journ. Bot. (1880) p. 260; BENTH. Fl. Austral. I. p. 475; HENRY List Pl. Formos. p. 29; MATSUM. et HAYATA Enum. Pl. Formos. p. 97.

*Dodonæa angustifolia* LINN.; ROXB. Fl. Ind. II. p. 256.

*Dodonæa Burmanniana* DC. Prodr. I. p. 616.

*Dodonæa dioica* ROXB. Fl. Ind. II. p. 256.

*Dodonæa microcarpa* DC. Prodr. I. p. 617.

HAB. Senton, Taiton, Tamsui, Takow.

DISTRIB. Generally diffused in the warm regions; Bonin, China and India.

10. *Euscaphis* SIEB. et ZUCC.

*Euscaphis japonica* PAX in ENGL. et PRANTL Nat. Pfl.-fam. III.-5, p. 262; MATSUM. in Tōkyō Bot. Mag. XII. p. 63; ITō et MATSUM. Tent. Fl. Lutch. p. 389; DIELS Fl. Centr. Chin. p. 448; MATSUM. et HAYATA Enum. Pl. Formos. p. 97.

*Euscaphis staphyleoides* SIEB. et ZUCC. Fl. Jap. I. p. 124, t. 67; MIQ. Prol. Fl. Jap. p. 256; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 91; HANCE in



Journ. Bot. (1880) p. 260, et "(1882) p. 4;" FRANCHET Pl. David. p. 78;  
FORBES et HEMSL. Ind. Fl. Sin. I. p. 143.

*Sambucus japonica* THUNB. Fl. Jap. p. 125.

HAB. Shichiseitonzan, Taiton.

DISTRIB. Japan and China.

### 11. *Turpinia* VENT.

***Turpinia pomifera*** DC. Prodr. II. p. 3; HIERN in HOOK. f. Fl. Brit. Ind. I. p. 698; FORBES et HEMSL. Ind. Fl. Sin. I. p. 143; MAXIM. in Mém. Biol. XII. (1886) p. 435; ITÔ et MATSUM. Tent. Fl. Lutch. p. 390; MATSUM. et HAYATA Enum. Fl. Formos. p. 98.

*Dalrymplea pomifera* ROXB. Fl. Ind. I. p. 633.

HAB. Tamsui, Kussaku, Bankinsing.

DISTRIB. In the tropical and subtropical regions of Asia; Japan, Hongkong, southern China, India.

## Sabiaceæ.

### *Conspectus of the Formosan Genera.*

- |  |                     |
|--|---------------------|
| (1) Stamens 4-5, all perfect and equal. .... | <i>Sabia</i> . 1    |
| Stamens 5, very unequal. ....                | <i>Meliosma</i> . 2 |

### 1. *Sabia* COLEBR.

***Sabia Swinhœi*** HEMSLEY in FORBES et HEMSL. Ind. Fl. Sin. I. p. 144;  
HENRY List Pl. Formos. p. 29; MATSUM. et HAYATA Enum. Pl. Formos. p. 98.

I saw the specimen at Kew; but the species is not yet represented in our Governmental collections.

DISTRIB. Central China.



2. *Meliosma* BLUME.*Dichotomous Key to the Formosan Species.*

- (1) Leaves simple. (2)  
 Leaves compound. .... *M. rhoifolia*.
- (2) Leaves lanceolate or oblong, acuminate on both ends, elongately petioled,  
 flowers more laxly arranged on the compound raceme. ....  
 .... *M. squamulata*.
- Leaves oblanceolate, petioles shorter, flowers much denser. ... *M. rigida*.

**Meliosma rhoifolia** MAXIM. in Mél. Biol. VI. p. 262; FORBES et  
 HEMSL. Ind. Fl. Sin. I. p. 146; HENRY List Pl. Formos. p. 29; MATSUM.  
 et HAYATA Enum. Pl. Formos. p. 98.

HAB. Tamsui.

DISTRIB. An endemic plant.

**Meliosma rigida** SIEB. et ZUCC.; MAXIM. in ENGL. Bot. Jahrb. VI. p.  
 60; FORBES et HEMSL. Ind. Fl. Sin. I. p. 145; HENRY List Pl. Formos. p.  
 29; MATSUM. et HAYATA Enum. Pl. Formos. p. 99.

*Meliosma pungens* HOOK. f. Fl. Brit. Ind. II. p. 4.

HAB. Kelung.

DISTRIB. Japan, Himalaya.

**Meliosma squamulata** HANCE in Journ. Bot. (1876) p. 364; FORBES  
 et HEMSL. Ind. Fl. Sin. I. p. 146; HENRY List Pl. Formos. p. 29; MATSUM.  
 et HAYATA Enum. Pl. Formos. p. 99; HAYATA Materials for a Flora of  
 Formosa. p. 71.

Arbour, branches cinerascens, more or less lenticellate, glabrous. Leaves  
 simple, long petiolate, coriaceous, oblong-lanceolate, 10-12 cm. long, 3½-  
 4½ cm. broad, acuminate or caudate at the apex, attenuate at the base, quite  
 glabrous and polished above, pallid or glaucous beneath, under microscope  
 minutely lepidote and pubescent, primary veins arcuate, anastomosing at the  
 extremities, petioles nearly 7-8 cm. long. Flowers white, racemosely panicu-  
 late. Panicles erect, 15 cm. long, 5 cm. broad, branches slender, 5-6 cm. long,



lateral branches divaricate, covered by ferrugineous hairs, bracts and bracteoles minute, scaly, pedicels 1-3 mm. long. Sepals broadly rounded, nearly 2 mm. broad, ciliolate on the margin. Petals 5, 3-larger ones broadly rounded,  $3\frac{1}{2}$  mm. long as broad, 2-smaller ones 1 mm. long, narrowed, 2-dentate at the apex, opposite the stamens. Stamens 2, filaments dilated, 2 mm. long. Staminodes 3, opposite larger petals, filaments very dilated. Disk small, irregularly dentate. Ovary glabrous, globose, 2 mm. long (including style) 2-celled.

HAB. Uraisha, South Cape.

DISTRIB. Hongkong.

## Anacardiaceæ.

### *Conspectus of the Formosan Genera.*

- (1) Petals 0, calyx 5-parted, leaves alternate, compound. . . . . *Pistacia*. 2  
Petals exist. (2)
- (2) Leaves simple. (3)  
Leaves compound. . . . . *Rhus*. 1
- (3) Stamens 1-5. . . . . *Mangifera*. 3  
Stamens 10. . . . . *Buchanania*. 4

### 1. *Rhus* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Scandent shrubs. (2)  
Trees. (3)
- (2) Fruits glabrous. . . . . *R. Toxicodendron*.  
Fruits beset with minute bristles. . . . . *R. intermedia*.
- (3) Leaflets serrate. . . . . *R. semi-alata*.  
Leaflets entire. . . . . *R. succedanea*.

***Rhus intermedia*** HAYATA Fl. Mont. Formos. p. 73. Radicant or vobule. Leaves tri-foliolate, nearly 30 mm. long (including petioles), petioles 9-10 cm. long, slightly hairy, as long as terminal leaflets, lateral



leaflets oblong, acute, rounded at the base, oblique, 13 cm. long, shortly petiolulate, petiolules 3 mm. long, terminal leaflets long petiolulate, petiolules 3 cm. long, blades oblong-ovate, acute or shortly acuminate at the apex, 15 cm. long,  $7\frac{1}{2}$  cm. broad, entire, costa and nerves pilose beneath, at last glabrous. Drupes broadly globose, compressed, shortly apiculate, 5 cm. broad as long, greenish or yellowish, covered with short setaceous hairs.

HAB. Morrison.

The present plant is in every respect very like *Rhus Toxicodendron* LINN., but differs from it in having densely bristled fruits. The species appears to be referable to *Trichocarpeæ*, on account of its bristled exocarpium. It is also to be referable to *Venenatæ* by the mesocarpium and general characters of the fruit. The plant may better be placed between the two sections. Bristled fruits are sometimes found in the Japanese *R. Toxicodendron*, though they are not so conspicuous as in the Formosan species.

**Rhus semi-alata** MURR.; DC. Prodr. II. p. 67; ENGL. in DC. Monogr. Phanerog. IV. p. 380; FRANCHET Pl. David. p. 78; HOOK. f. Fl. Brit. Ind. II. p. 10; FORBES et HEMSL. Ind. Fl. Sin. I. p. 147; HENRY List Pl. Formos. p. 29; DIELS Fl. Centr. Chin. p. 433; PALIBIN Conspect. Fl. Koreæ I. p. 60; MATSUM. et HAYATA Enum. Pl. Formos. p. 100.

*Rhus javanicum* LINN. Sp. Pl. ed-2, p. 380; LOUR. Fl. Cochinch. ed-WILLD. p. 228.

HAB. Takow, Shintiku, Tōfun, Shinkōshō, Fūkō, Shajō, Bankinsing.

DISTRIB. East Himalaya, Khasia, Assam, China, Japan.

**Rhus succedanea** LINN.; DC. Prodr. II. p. 68; THUNB. Fl. Jap. p. 122; ROXB. Fl. Ind. II. p. 98; BENTH. Fl. Hongk. p. 69; WIGHT Ic. Pl. Ind. Or. t. 560; MIQ. Prol. Fl. Jap. p. 16; HOOK. f. Fl. Brit. Ind. II. p. 12; FRANCHET Pl. David. I. p. 79; FORBES et HEMSL. Ind. Fl. Sin. I. p. 146; HENRY List Pl. Formos. p. 29; DIELS Fl. Centr. Chin. p. 433; MATSUM. et HAYATA Enum. Pl. Formos. p. 100.

*Rhus succedanea* LINN. var. *japonica* ENGL. in DC. Monogr. Phanerog. IV. p. 399; ITÔ et MATSUM. Tent. Fl. Lutch. p. 392.



*Connarus juglandifolius* HOOK. et ARN. Bot. Beech. Voy. p. 179.

HAB. Taichū, Giran, Tensonpi, Ōkaseki, Bankinsing.

DISTRIB. Japan, Himalaya, Java, central China.

**Rhus Toxicodendron** LINN. (var. ?); ENGL. in DC. Monogr. Phanerog. IV. p. 393; FORBES et HEMSL. Ind. Fl. Sin. I. p. 148; HENRY List Pl. Formos. p. 30; DIELS Fl. Centr. Chin. p. 433, (var.); MATSUM. et HAYATA Enum. Pl. Formos. p. 101.

HAB. South Cape.

DISTRIB. Japan, central China.

## 2. *Pistacia* LINN.

**Pistacia formosana** MATSUM. in Tōkyō Bot. Mag. XV. p. 40; MATSUM. et HAYATA Enum. Pl. Formos. p. 99, t. 9; HAYATA Fl. Mont. Formos. p. 74.

HAB. Kashinro, Sooboonssha, Tanlang, Tōseikaku, Kōshūn, Akō.

DISTRIB. An allied species *P. chinensis* BUNGE is found in central and northern China.

## 3. *Mangifera* LINN.

**Mangifera indica** LINN. Sp. Pl. ed-2, p. 290; DC. Prodr. II. p. 63; BENTH. Fl. Hongk. p. 70 (in nota); ENGL. in DC. Monogr. Phanerog. IV. p. 198; FORBES et HEMSL. Ind. Fl. Sin. I. p. 148; HENRY List Pl. Formos. p. 30; MATSUM. et HAYATA Enum. Pl. Formos. p. 101.

HAB. Ringaryō, Goshōrin, Bōryō, Tōkō, Hokuto, Maruyama, (No. 380), Takow, Bankinsing.

DISTRIB. India, tropical Asia.

## 4. *Buchanania* ROXB.

**Buchanania arborescens** BLUME Mus. Bot. Lugd.-Bat. I. p. 183; MIQ. Fl. Ind. Bat. I.-2, p. 636; HENRY List Pl. Formos. p. 30; MATSUM. et HAYATA Enum. Pl. Formos. p. 102.



*Buchanania longifolia* BLUME Mus. Bot. Lugd.-Bat. I. p. 184, et MIQ. Fl. Ind. Bat. I.-2, p. 636.

*Buchanania bancana* MIQ. "Fl. Ind. Bat. Suppl., p. 523."

*Buchanania florida* SCHAUER *a. arborescens* ENGL. in DC. Monogr. Phanerog. IV. p. 186.

HAB. Takow, South Cape, Bankinsing.

DISTRIB. East India, Philippines, Celebes, Java, Sumatra, Borneo.

## Coriariæ.

### *Coriaria* LINN.

*Coriaria intermedia* MATSUM. in Tōkyō Bot. Mag. XII. p. 62; MATSUM. et HAYATA Enum. Pl. Formos p. 102.

HAB. Suiteiryō, Shūshūgai, Goshōrin, Giran; Hachirisha, Holisha, Taikōkei.

## Leguminosæ.

### *Conspectus of the Formosan Genera.*

Papilionaceæ. Corolla papilionaceous. Petals irregular, imbricated, the uppermost (standard) outermost, the four others in two opposite pairs. Stamens definite. (1)

Cæsalpinieæ. Petals imbricate, slightly unequal, the upper innermost in bud. Stamens definite. (38)

Mimoseæ. Petals regular, valvate, usually united above the base. Stamens definite or indefinite. (41)

- (1) a) Stamens monadelphous. Pod dehiscent, not jointed. Leaves simple or digitately 3-foliate. .... *Crotalaria*. 1
- b) Stamens diadelphous. Pod usually dehiscent, not jointed. Leaves digitately or pinnately 3-foliate, leaflets usually toothed. (2)
- c) Stamens diadelphous. Pod dehiscent, not jointed. Leaves pinnately 5-foliate, leaflets entire. .... *Lotus*.



- d) Stamens usually diadelphous. Pod dehiscent, not jointed. Leaves imparipinnate; leaflets entire. (4)
- e) Stamens diadelphous or monadelphous. Pod jointed if more than 1-seeded. Leaves odd-pinnate. (8)
- f) Stamens diadelphous (the tenth abortive in *Abrus*). Pod dehiscent, not jointed. Leaves equally pinnate; petiole ending in a tendril or bristle. (16)
- g) Stamens monadelphous or diadelphous. Pod dehiscent, not jointed. Climbing, rarely erect herbs or shrubs, with pinnately 3-foliolate leaves. (17)
- h) Stamens monadelphous or diadelphous. Pod continuous, indehiscent. Leaves odd pinnate. (35)
- i) Stamens free. Pod not jointed. Leaves odd-pinnate. *Sophora*. 47
- (2) Leaves digitately 3-foliolate. .... *Trifolium*. 4  
 Leaves pinnately 3-foliolate. (3)
- (3) Pod short, round or oblong. .... *Melilotus*. 3  
 Pod falcate or spiral. .... *Medicago*. 2
- (4) Anthers apiculate. Hairs fixed by the centre. .... *Indigofera*. 6  
 Anthers obtuse. Hairs basifixed. (5)
- (5) Pod subindehiscent or later on dehiscing. .... *Millettia*. 8  
 Pod soon dehiscing. (6)
- (6) Flowers mostly in leaf-opposed racemes. .... *Tephrosia*. 7  
 Flowers mostly in axillary racemes. (7)
- (7) Pod very long distinctly septate. .... *Sesbania*. 9  
 Pod linear not septate. .... *Astragalus*. 10
- (8) Leaves exstipellate. (9)  
 Leaves stipellate (stamens diadelphous, anthers uniform). (12)
- (9) Stamens diadelphous (9 and 1) anthers uniform. .... *Lespedeza*. 21  
 Stamens monadelphous or in two bundles of 5 each. (10)
- (10) Stamens monadelphous; anthers dimorphous. (10\*)  
 Stamens in two bundles of 5 each, anthers uniform. (11)
- (10\*) Calyx-tube long filiformed. .... *Arachis*. 14  
 Calyx-tube not elongated. .... *Zornia*. 15



- (11) Pod twisted inside the calyx. .... *Smithia*. 13  
 Pod straight, exserted from the calyx. (11\*)
- (11\*) Tall shrub, pod linear, compressed, longitudinally striate, articles narrowed on both ends. .... *Ormocarpum*. 11  
 Shrubby herb, pod stalked, articles truncate on both ends. ....  
 .... *Æschynomene*. 12
- (12) Pod turgid not distinctly jointed. .... *Pycnospora*. 17  
 Pod distinctly jointed. (13)
- (13) Pod twisted up so that the joints are brought face to face. (14)  
 Pod not twisted up. (15)
- (14) Calyx accrescent; teeth lanceolate. .... *Lourea*. 19  
 Calyx not accrescent, teeth setaceous. .... *Uraria*. 18
- (15) Joints turgid. .... *Alysicarpus*. 20  
 Joints flattened. .... *Desmodium*. 16
- (16) Shrubs with the tenth stamen absent. .... *Abrus*. 24  
 Herbs with diadelphous stamens (9 and 1). (16\*).
- (16\*) Style inflexed, filiformed, slightly compressed, upwards pubescent, stigma terminal, staminal sheath oblique at the mouth. .... *Vicia*. 22  
 Style inflexed, dilate, margin retroflected, upwards laterally compressed, face inner side longitudinally barbate, stigma nearly terminal, staminal sheath equal at the mouth. .... *Pisum*. 23
- (17) Leaves not gland-dotted. (18)  
 Leaves gland-dotted. (31)
- (18) Style beardless. (19)  
 Style bearded below the stigma. (26)
- (19) Nodes of racemes not tumid. (20)  
 Nodes of racemes tumid. (21)
- (20) Stamens diadelphous, stipules and bracts conspicuous persistent. ....  
 .... *Dumasia*. 26  
 Stamens monadelphous, stipules and bracts minute caducous. ....  
 .... *Glycine*. 27
- (21) Petals very unequal. (22)  
 Petals equal. (24)



- (22) Keel exceeding the wings and standard. (23)  
     Standard exceeding the keel and wings.....*Erythrina*. 28
- (23) Anthers dimorphous. ....*Mucuna*. 30  
     Anthers uniform.....*Apios*. 29
- (24) Stamens diadelphous. ....*Galactia*. 31  
     Stamens monadelphous. (25)
- (25) Upper lip of calyx projecting.....*Canavalia*. 33  
     Upper teeth of calyx not projecting.....*Pueraria*. 32
- (26) Stigma oblique. (27)  
     Stigma terminal. (29)
- (27) Keel spiral. ....*Phaseolus*. 34  
     Keel not spiral. (28)
- (28) Style filiformed. ....*Vigna*. 35  
     Style flat upwards. ....*Pachyrhizus*. 36
- (29) Petals very unequal in length.....*Clitoria*. 25  
     Petals equal in length. (30)
- (30) Pod flattish. ....*Dolichos*. 38  
     Pod square, 4-winged. ....*Psophocarpus*. 37
- (31) Ovules 3 or more. (32)  
     Ovules 1-2. (34)
- (32) Pod with depressed lines between each seed. (33)
- (33) Seeds with a large grooved aril. ....*Atylosia*. 40  
     Aril absent. ....*Cajanus*. 39
- (34) Leaves pinnate. Pod compressed.....*Rhynchosia*. 41  
     Leaves digitate. Pod turgid. ....*Flemingia*. 42
- (35) Leaves distinctly alternate.....*Dalbergia*. 43  
     Leaves opposite. (36)
- (36) Pod flat. (37)  
     Pod round, subdrupaceous.....*Euchresta*. 46
- (37) Pod almost woody, wingless. ....*Pongamia*. 45  
     Pod thin, firm, winged down one or both sutures.....*Derris*. 44
- (38) Leaves pinnate. (39)  
     Leaves simple, mostly deeply 2-lobed.....*Bauhinia*. 52



- (39) Leaves ample, abruptly bipinnate. (40)  
 Leaves simply pinnate. (39\*).
- (39\*) Petals 3 larger conspicuous, the other 2 very minute .... *Lysidice*. 51\*  
 Petals 5, subequal. .... *Cassia*. 51
- (40) Calyx-tube disciferous, turbinate-campanulate. .... *Gleditchia*. 49  
 Calyx-tube disciferous very short. (40\*)
- (40\*) Calyx-limb nearly gamosepalous campanulate, teeth 5. ....  
 .... *Erythrophlœum*. 53  
 Calyx-limb not campanulate, segments more or less broader. (40\*\*)
- (40\*\*) Calyx-disk sub-basal; sepals imbricate. .... *Cæsalpinia*. 48  
 Calyx-disk sub-basal; sepals valvate. .... *Poinciana*. 50
- (41) Stamens definite, usually ten. (42)  
 Stamens indefinite. (44)
- (42) Anthers at first gland-crested. .... *Entada*. 54  
 Anthers not gland-crested. (43)
- (43) Pod ligulate continuous. .... *Leucæna*. 56  
 Pod jointed. .... *Mimosa*. 55
- (44) Stamens free. .... *Acacia*. 57  
 Stamens monadelphous. (45)
- (45) Pod thin, ligulate, the sutures not thickened. .... *Albizia*. 58  
 Pod circinate. .... *Pithecolobium*. 59

### 1. *Crotalaria* DILL.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves simple or 1-foliolate. (2)  
 Leaves at least 3-foliolate. (12)
- (2) Leaves obovate, retused at the apex. .... *C. retusa*.  
 Leaves, obtuse, acute or rounded, never retuse. (3)
- (3) Leaves larger rhomboid, cuneate at the base. .... *C. verrucosa*.  
 Leaves smaller, not cuneate at the base. (4)
- (4) Herbs very much smaller. Leaves oblong much rounded, rounded at  
 the base. (5)



- Much larger. Leaves linear or lanceolate or obovate, attenuate at the base. (6)
- (5) Leaves rounded at the apex. .... *C. acicularis*.  
 Leaves more or less aristate at the apex. .... *C. similis*.
- (6) Leaves linear, acute or acuminate at the apex. (7)  
 Leaves obovate, spathulate or linear, obtuse at the apex. (8)
- (7) Pod linear, oblong. .... *C. calycina*.  
 Pod oblong. .... *C. sessiliflora*.
- (8) Pod long exerted from the calyx. .... *C. ferruginea*.  
 Pod slightly exerted from the calyx. (9)
- (9) Beset with brownish silky hairs. .... *C. Kawakamii*.  
 Slightly hairy, with soft thin hairs. (10)
- (10) Leaves linear. (11)  
 Leaves obovate or spathulate. .... *C. formosana*.
- (11) Pod slightly exerted from the calyx. .... *C. linifolia*.  
 Pod much more exerted. .... *C. albida*.
- (12) Leaflets ovately obtriangular, truncate at the apex, or slightly emarginate. .... *C. Trifolium*.  
 Leaflets obovate, acute or emarginate. (13)
- (13) Leaflets oblong or obovate, obtuse at the apex or minutely apiculate. .... *C. elliptica*.  
 Leaflets obovate, emarginate at the apex, cuneate at the base. *C. striata*.

**Crotalaria acicularis** HAM.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 68; HAYATA Mater. Fl. Formos. p. 72.

HAB. Banchoryō.

DISTRIB. Java, Philippines, India.

**Crotalaria albida** HEYNE in "ROTH, Nov. p. 333"; DC. Prodr. II. p. 126; BENTH. Fl. Hongk. p. 74; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 71; FORBES et HEMSL. Ind. Fl. Sin. I. p. 150; HENRY List Pl. Formos. p. 30; MATSUM. et HAYATA Enum. Pl. Formos. p. 102.

HAB.

DISTRIB. Throughout tropical sea-shores.



**Crotalaria calycina** SCHRANK DC. Prodr. II. p. 129; BENTH. Fl. Hongk. p. 74; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 72; FORBES et HEMSL. Ind. Fl. Sin. I. p. 151; HENRY List Pl. Formos. p. 30; MATSUM. et HAYATA Enum. Pl. Formos. p. 102.

HAB.

DISTRIB. Tropical Asia, Africa and Australia.

**Crotalaria elliptica** ROXB.; MATSUM. et HAYATA Enum. Pl. Formos. p. 130; HAYATA Materials for a Flora of Formosa p. 72. Scandent, pubescent, branched, flexuose. Leaves trifoliolate, pubescent, petiolate, petioles 3 cm. long, longer than leaflets, leaflets subsessile, terminal one longer than the lateral ones, oblong or obovate, retused or minutely mucronate, 3 cm. long, 2 cm. broad. Spikes axillary on the upper branchlets, 7-8 cm. long, pedunculate. Flowers 6 mm. long, pedicellate, pedicels 3 mm. long. Calyx base minutely 2-bracteate, (bracts subulate), campanulate 3 mm. long, 5-lobate, lobes as long as the tube, triangular, acute,  $1\frac{1}{2}$  mm. long, 1 mm. broad, pubescent. Standard orbicular, clawed, (blade 5 mm. long, carinate outside at the middle, claws  $1\frac{1}{2}$  mm. long) villose inside, strongly reflexed above the claw, 2-callose; wings obovate, 6 mm. long; keel incurved 7 mm. long, rostrate. Ovary stipitate, (stalk  $1\frac{1}{2}$  mm. long), 2-ovulate, villose, style abruptly inflexed at the middle, more or less longitudinally barbate inside on the upper portion. Stamens connate. Legumen pedicellate, nodding, pressingly villose, obovate or globose 6 mm. long, 4 mm. broad, obliquely inflated at the apex, (style rostrate), 2-seeded.

HAB. Akō: Kōtanshō.

Near *C. Trifoliatum* WILLD.; but differs in having much larger obovate folioles and larger flowers.

**Crotalaria furruginea** GRAH.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 68; HANCE in Journ. Bot. (1882) p. 4; FORBES et HEMSL. Ind. Fl. Sin. I. p. 151; HENRY List Pl. Formos. p. 30; MATSUM. et HAYATA Enum. Pl. Formos. p. 103.

HAB. Pachina, Shintiku, Taitō, Suibi.



DISTRIB. Widely distributed in India, and extending to the Malay Archipelago and to the Loo-choo islands.

**Crotalaria formosana** MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 395; MATSUM. et HAYATA Enum. Pl. Formos. p. 103; HAYATA Fl. Mont. Formos. p. 74.

HAB. Shōkwa, Tainan, Tappansha.

Closely resembles *C. linifolia* LINN.; probably a form of it.

**Crotalaria Kawakamii** HAYATA Materials for a Flora of Formosa p. 73. Ferrugineo-hirsute or tomentose, erect, branched, 40–50 cm. long. Leaves alternate, oblong-linear, ferrugineo-tomentose, sessile, 2 cm. long, 4 mm. broad, glandulose beneath, long hispid on the costa as well as on the margin. Flowers solitary, axillary or terminal. Calyx campanulate, 1 cm. long, 2-bracteate at the base, (bracts subulate 6 mm. long), 5-fid, lobes lanceolate, long flavido-ferrugineo-strigose. Pods inflated, oblique, oblong, 13 mm. long, 5 mm. broad, glabrous.

HAB. Taichū.

Very near *C. ferruginea*; but differs in having smaller, narrower and more strigose leaves and much smaller pods.

**Crotalaria linifolia** LINN.; DC. Prodr. II. p. 128; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 72; FORBES et HEMSL. Ind. Fl. Sin. I. p. 151.

HAB. Taitō, Suibi; Giran.

DISTRIB. Tropical Asia, the Philippines and to Australia.

**Crotalaria retusa** LINN.; DC. Prodr. II. p. 125; HOOK. et ARN. Bot. Beech. Voy. p. 180; BENTH. Fl. Hongk. p. 74; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 75; Bot. Mag. t. 2561; FORBES et HEMSL. Ind. Fl. Sin. I. p. 152; MATSUM. et HAYATA Enum. Pl. Formos. p. 103.

HAB. Hōzan.

DISTRIB. Tropical Asia, Australia, Africa and America.

**Crotalaria sessiliflora** LINN.; DC. Prodr. II. p. 129; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 73; FORBES et HEMSL. Ind. Fl. Sin. I. p. 152; MATSUM. et HAYATA Enum. Pl. Formos. p. 103.



HAB. Taitō, Suibi, Biōritsu, Shintiku.

DISTRIB. India, Malaya, Japan and the Philippines.

**Crotalaria similis** HEMSL. Ann. Bot. IX. p. 152; MATSUM. et HAYATA Enum. Pl. Formos. p. 103; HAYATA Mater. Fl. Formos. p. 74.

HAB. Kōshūn: Garanbi.

A very small herb, procumbent at the base, the erect portion nearly 8 cm. long; leaves secund, turning to one side, villous above, silky below, ovate or even round, 8 mm. long, 4–5 mm. broad, very approximately leafy along the whole length of the stem. Flowers terminal, solitary or a very few, sepals lanceolate, pod black, nearly globular, 1 cm. long.

**Crotalaria striata** DC. Prodr. II. p. 131; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 84; HANCE in Journ. Bot. (1879), p. 10; Bot. Mag. t. 3200; FORBES et HEMSL. Ind. Fl. Sin. I. p. 153; MATSUM. et HAYATA Enum. Pl. Formos. p. 103.

HAB. Tainan, Akō.

DISTRIB. Tropical Asia, Africa and America.

**Crotalaria Trifolium** WILLD.; WIGHT Ic. Pl. Ind. Or. t. 421; MIQ. Fl. Ind. Bat. I. p. 344; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 82; MATSUM. in ITŌ et MATSUM. Tent. Fl. Lutch. p. 397; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Pinang.

DISTRIB. India and Java.

**Crotalaria verrucosa** LINN.; DC. Prodr. II. p. 125; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 77; FORBES et HEMSL. Ind. Fl. Sin. I. p. 153; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Chikusanshō, Ringaryō, Taitō, Shifun, Shinkō.

DISTRIB. Tropical Asia, Africa, America.

## 2. *Medicago* LINN.

### *Dichotomous Key to the Formosan Species.*

Stipules laciniate or fimbriate, leaves quite glabrous. .... *M. denticulata*.  
Stipules entire, leaves pubescent. .... *M. lupulina*.



**Medicago denticulata** Willd. Sp. Pl. III. p. 1414; DC. Prodr. II. p. 176; BAKER in Hook. f. Fl. Brit. Ind. II. p. 90; FRANCHET Pl. David. p. 80; FORBES et HEMSL. Ind. Fl. Sin. I. p. 153; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Bōkyō.

DISTRIB. Generally diffused in north temperate regions and naturalized in the southern regions.

**Medicago lupulina** LINN.; DC. Prodr. II. p. 172; BENTH. Fl. Hongk. p. 75; FORBES et HEMSL. Ind. Fl. Sin. I. p. 154; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Tamsui.

DISTRIB. Common in temperate and subtropical Asia and Europe.

### 3. *Melilotus* JUSS.

**Melilotus parviflora** DESF.; DC. Prodr. II. p. 187; BAKER et S. MOORE in Journ. Linn. Soc. XVII. p. 381; FRANCHET Pl. David. p. 81; FORBES et HEMSL. Ind. Fl. Sin. I. p. 155; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Senton, Taipeh, Kelung, Sharyōtō, Tamsui.

DISTRIB. Common in Europe and Asia.

### 4. *Trifolium* LINN.

The genus is not represented in our flora.

### 5. *Lotus* LINN.

**Lotus corniculatus** LINN.; DC. Prodr. II. p. 214; "HANCE in Journ. Bot. (1882) p. 259"; FORBES et HEMSL. Ind. Fl. Sin. I. p. 155; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB.

DISTRIB. Common in Europe and Asia.

### 6. *Indigofera* LINN.

*Dichotomous Key to the Formosan Species.*

Leaves simple linear. .... *Indigofera tinifolia*.



- Leaves compound. .... { *I. trifoliata*.  
 (1) Leaves trifoliolate. .... { *I. glandulifera*.  
     Leaves pinnate, leaflets more than three. (2)  
 (2) Plant ferrugineo-hirsute. .... *I. hirsuta*.  
     Plant quite or nearly glabrous or slightly pubescent. (3)  
 (3) Leaflets larger, oblong, 5 cm. long .... *I. kotsensis*.  
     Leaflets smaller, oblong, less than  $2\frac{1}{2}$  cm. (4)  
 (4) Pod linear, 5 cm. long, straight. .... *I. venulosa*.  
     Pod linear,  $2\frac{1}{2}$  cm. long. (5)  
 (5) Pod nearly straight. .... { *I. tinctoria*.  
     Pod strongly recurved. .... { *I. pseudo-tinctoria*.  
     Pod strongly recurved. .... *I. Anil*.

**Indigofera Anil** LINN. DC. Prodr. II. p. 225; BENTH. Fl. Hongk. p. 77; FORBES et HEMSL. Ind. Fl. Sin. I. p. 156; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Tamsui, Taihoku, Shintiku, Hozan, Shintengai, Kussaku.

DISTRIB. Common in tropical Africa, and some part of Asia.

**Indigofera decora** LINDL.; WALP. Ann. I. p. 230; BENTH. Fl. Hongk. p. 77; Bot. Mag. t. 5063; FORBES et HEMSL. Ind. Fl. Sin. I. p. 156; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB.

DISTRIB. Japan.

**Indigofera glandulifera** HAYATA Materials for a Flora of Formosa p. 74. Base shrubby, slender, glabrous or pubescent, many-branched. Leaves trifoliolate, petiolate, petioles 5 mm. long, folioles sessile or shortly petiolulate, oblong-obovate or oblanceolate, rounded or shortly mucronate at the apex, base narrowed, 1 cm. long, 4 mm. broad, adpressingly pubescent on both sides, glandulously punctate beneath. Flowers small, 3 mm. long, clustered at the axils. Calyx pubescent,  $2\frac{1}{2}$  mm. long, 5-fid, lobes linear, 2 mm. long. Petals pubescent outside; standard obovate 3 mm. long,  $1\frac{1}{2}$  mm. broad, narrowed

\* The distinction between *I. tinctoria* and *I. pseudo-tinctoria* is not very clearly observed in the Formosan species.



at the base; wings narrowed, 3 mm. long; keel slightly incurved, rounded at the apex, 3 mm. long, ciliate on the upper side. Ovary cylindrical,  $1\frac{1}{2}$  mm. long. Pod linear, slightly complanate, tetragonous in section, 4-winged, 12 mm. long,  $1\frac{1}{2}$  mm. broad.

HAB. Akō; Taitō, Hinan.

Near *I. trifoliata*, but differs in having 4-winged legumen and gland-dotted leaves, which are more conspicuously dotted on the under surface.

**Indigofera hirsuta** LINN.; DC. Prodr. II. p. 228; BENTH. Fl. Hongk. p. 76; FORBES et HEMSL. Ind. Fl. Sin. I. p. 157; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Hōzan, Soobonsha, Sensoleishō.

DISTRIB. Widely distributed in tropical Asia, Africa, America and Australia

**Indigofera kotoensis** HAYATA Materials for a Flora of Formosa p. 75. Shrubby, branches fulvo-cinerascent, lenticellate, branchlets straight, subtetragonous or subterete, slightly pubescent or subglabrous, remotely foliate. Leaves imparipinnate, oblong-linear in outline, 18 cm. long, 8 cm. broad, thinly pubescent, lateral leaflets equally long, 5-6 on each side, terminal one oblong,  $5\frac{1}{2}$  cm. long, 2 cm. broad, obtuse at the apex, shortly aristate at the extremity, obtuse at the base, quite entire, thinly chartaceous or membranaceous, veins slightly elevated above, inconspicuous beneath, depressingly pubescent above, petiolules 3 mm. long, petioles 2 cm. long, furrowed above, glandulose, terminal leaflet larger than the lateral ones. Racemes terminal or axillary 8 cm. long, densely flowered, (peduncles 1 cm. long), bracts reduced to small ciliate teeth at the pulvinus. Flowers 9 mm. long, pubescent. Calyx broadly campanulate, very oblique,  $1\frac{1}{2}$  mm. long on the upper side, but 3 mm. long on the lower side, 6-dentate; standard rounded, rounded at the apex, 11 mm. long,  $7\frac{1}{2}$  mm. broad, truncately obtuse at the base; wings narrowed, 9 mm. long, 2 mm. broad, carinate on the back at the base; keel broadly knife-shaped, 9 mm. long,  $3\frac{1}{2}$  mm. broad, obtuse at the apex, broadly truncate at the base. Ovary glabrous.

HAB. Kōtōshō.



Near *Indigofera atropurpurea* ROXB.; but differs from it by the slightly curved pods and the very short bracts reduced to ciliate teeth. The bracts of *I. atropurpurea* are very long, and much exceed flower-buds in length.

**Indigofera linifolia** RETZ; DC. Prodr. II. p. 222; WIGHT Ic. t. 313; BENTH. Fl. Austral. II. p. 195; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 92; TRIMEN Fl. Ceyl. II. p. 22; HENRY List Pl. Formos. p. 31; ITÔ et MATSUM. Tent. Fl. Lutch. p. 399; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB. Beelonsan, Kilai, Takow.

DISTRIB. India, Ceylon, Australia.

**Indigofera macrostachya** VENT. DC. Prodr. II. p. 226; BAKER et S. MOORE in Journ. Linn. Soc. XVII. p. 381; FRANCHET Pl. David. p. 82; FORBES et HEMSL. Ind. Fl. Sin. I. p. 157; MATSUM. et HAYATA Enum. Pl. Formos. p. 104.

HAB.

DISTRIB. China.

**Indigofera tinctoria** LINN. DC. Prodr. II. p. 224; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 99; FRANCHET Pl. David. p. 82; FORBES et HEMSL. Ind. Fl. Sin. I. p. 157; MATSUM. et HAYATA. Enum. Pl. Formos. p. 104.

HAB. Tamsui, Shintiku.

DISTRIB. Widely cultivated in the Tropics.

**Indigofera trifoliata** LINN.; HOOK. f. Fl. Brit. Ind. II. p. 96; HANCE in Journ. Bot. (1879,) p. 105; WIGHT Ic. Pl. Ind. Or. t. 314; FORBES et HEMSL. Ind. Fl. Sin. I. p. 157; HAYATA Mater. Fl. Formos. p. 75.

HAB. Kōshūn, Kōtōshō.

DISTRIB. Through tropical Asia to northern Australia.

**Indigofera venulosa** CHAMP.; WALP. Ann. IV. p. 487; BENTH. Fl. Hongk. p. 77; FORBES et HEMSL. Ind. Fl. Sin. I. p. 158; HAYATA Mater. Fl. Formos. p. 76.

HAB. Byōritsu, Daitōsei, Horisha, Tochikōan.

DISTRIB. China: Kiangsu, Kiangsi, Chekiang, Hongkong; Corean Archipelago.



OBSERV. A small shrub; leaves imparipinnate, 3-4-juged; pinnæ remotely opposite, stipellate, ovate, apiculate, 2 mm. long, 1 cm. broad, dark above, whitish below; flowers red, 1 cm. long, racemose; pod linear 5 mm. long, 4 mm. broad, black, nearly straight or slightly incurved.

### 7. *Tephrosia* PERS.

***Tephrosia purpurea*** PERS.; DC. Prodr. II. p. 251; BENTH. Fl. Hongk. p. 78; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 112; FORBES et HEMSL. Ind. Fl. Sin. I. p. 158; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Takow.

DISTRIB. Common in the Tropics.

### 8. *Millettia* W. et ARN.

***Millettia reticulata*** BENTH.; HANCE in Journ. Linn. Soc. XIII. p. 101; FORBES et HEMSL. Ind. Fl. Sin. I. p. 159; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Senton, Taiton, Hokuto.

DISTRIB. China.

### 9. *Sesbania* PERS.

***Sesbania ægyptiaca*** PERS.; DC. Prodr. II. p. 264; WIGHT Ic. Pl. Ind. Or. t. 32; FORBES et HEMSL. Ind. Fl. Sin. I. p. 162; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Tamsui, Pachina, Reigaryō, Takow.

DISTRIB. Common in the Tropics of the Old World.

### 10. *Astragalus* LINN.

***Astragalus sinicus*** LINN.; KURZ in Journ. Bot. (1873), p. 193; Bot. Mag. t. 1350; FORBES et HEMSL. Ind. Fl. Sin. I. p. 166; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Pachina.

DISTRIB. Japan.



11. *Ormocarpum* R. BR.

*Ormocarpum glabrum* TELJSM. et BINN.; ITÔ et MATSUM. Tent. Fl. Lutch. p. 408; MATSUM. et HAYATA Enum. Pl. Formos. p. 106.

HAB. Kelung.

DISTRIB.

12. *Æschynomene* LINN.

*Æschynomene indica* LINN.; DC. Prodr. II. p. 320; BENTH. Fl. Hongk. p. 79; FRANCHET Pl. David. p. 97; FORBES et HEMSL. Ind. Fl. Sin. I. p. 170; MATSUM. et HAYATA Enum. Pl. Formos. p. 106.

HAB. Hatto, Taihoku, Pachina, Keibi, Shinkōgai.

DISTRIB. Tropical Asia, Africa and Australia.

13. *Smithia* ATT.

*Dichotomous Key to the Formosan Species.*

Calyx-segments rotundate, long ciliate. .... *S. Nagasawai*.  
Calyx-segments acute, not or slightly ciliate..... *S. sensitiva*.

**Smithia Nagasawai** Materials for a Flora of Formosa p. 76. Shrubby, ascendent, branches straight, slender, remotely branched, glabrous, striate, fusco-rubescens, terete, branchlets slender, remotely foliate. Leaves alternate deciduous, pari-pinnate, broadly ovate in outline,  $1\frac{1}{2}$  cm. long, with a seta on the apex, seta 3 mm. long, pinnæ subopposite, 5-6-juged, linear-oblong, 1 cm. long,  $2\frac{1}{4}$  mm. broad, margin remotely ciliato-setulose, rounded and setulose at the apex, (seta  $\frac{2}{3}$  mm. long), strongly oblique at the base, acute on the upper side, roundly cordate on the lower side, glabrous above, remotely setulose on the costa beneath, (seta  $1\frac{1}{2}$  mm. long), petiolules short  $\frac{1}{4}$  mm. long, upper pinnæ smaller than the lower ones, pinnæ 2 mm. remote, exstipellate; petioles 2-3 mm. long, petioles and rhachis narrowly winged, beneath beset with long setæ, setæ 2 mm. long, stipules membranaceous acutely ovate, 5 mm. long, multinerved, margin ciliato-serrulate, long auriculate at the base on the lower side, (auricles narrowed 2 mm. long) truncate at the



apex. Racemes short, 3-5 mm. long, recurved, axillary near the apex of the branchlets, pedunculate, peduncles 1-2 cm. long, pedicels  $1\frac{1}{2}$  mm. long, 1-bracteate at the base, (bracts hyaline ovately-narrowed, 3 mm. long, margin ciliate setose, very oblique), 2-bracteolate at the apex, bracteoles ovately acute, 5 mm. long, acute on both sides, setose on the margin, (setæ  $1\frac{1}{2}$  mm. long), setulose outside, glabrous inside. Calyx 2-parted, upper-segment broadly ovate, plicate, 6 mm. long, 7-8 mm. broad, rotundately emarginate at the apex, carinate at the middle, margin upwards ciliate setulose, entire downwards, multinerved, setulose outside on the carina; lower segment obovate, 6 mm. long,  $3\frac{1}{2}$  mm. broad, ciliate setose, entire on the margin. Petals not known. Pods included within the calyx, 2 times spirally recurved, constricted between articles to the lower sutures, articles 7-8, obliquely broadly globose,  $1\frac{1}{2}$  mm. broad, minutely irregularly maculately punctate, carinate at the lower suture, upper suture rounded, lower suture straight or slightly incurved. Seeds reniformed, laterally compressed,  $1\frac{1}{2}$  mm. broad,  $1\frac{1}{4}$  mm. long.

HAB. Kōdenshō.

The present plant bears some resemblance to *Smithia ciliata* ROYLE, from which it is distinguishable by the truncate rather round apex of the bracts. The bracts of *S. ciliata* are rather acute on the apex.

**Smithia sensitiva** AIT.; DC. Prodr. II. p. 323; HANCE in Journ. Bot. (1878) p. 226; MAXIM. in Mél. Biol. IX. p. 58; FORBES et HEMSL. Ind. Fl. Sin. I. p. 170; MATSUM. et HAYATA Enum. Pl. Formos. p. 106.

HAB. Hikaku, Shintiku, Byōritsu, Taiharō.

DISTRIB. Tropical Asia and Africa.

#### 14. *Arachis* LINN.

**Arachis hypogæa** LINN.; MATSUM. et HAYATA. Enum. Pl. Formos. p. 106.

HAB. Senton, Taihoku, Hōzan.

DISTRIB. South American plant; cultivated in warm countries.



15. *Zornia* GMEL.

***Zornia diphylla*** PERS.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 147; BENTH. Fl. Hongk. p. 80; MAXIM. in Mém. Biol. XII. p. 436; FORBES et HEMSL. Ind. Fl. Sin. I. p. 171; MATSUM. et HAYATA Enum. Pl. Formos. p. 106.

HAB. Taitō: Suibi.

DISTRIB. Diffused all over the Tropics.

16. *Desmodium* DESV.

*Dichotomous Key to the Formosan Species.*

- a) Shrubs with woody branches, 3-foliolate leaves, flowers in dense short-peduncled or sessile axillary umbels, minute deciduous bracts. (1)
  - b) Shrubs with woody branches, 3-foliolate leaves, flowers umbellate, the umbels in long continuous rows and each hidden by a pair of persistent bracts. (2)
  - c) Shrubs with woody branches, 3-foliolate leaves, long racemes, small bracts and long pendulous many-jointed pods. (3)
  - d) Shrubs with 1-foliolate leaves, winged petioles, racemose flowers, minute bracts and acute keel. (4)
  - e) Erect herbs or under-shrubs with large 1-3-foliolate leaves, flowers often 2 or several from a node in long racemes simple or paniced, deciduous bracts and distinctly jointed pods. (5)
  - f) Trailing herbs, with small 3-foliolate stipellate leaves, flowers in sparsely lax racemes or 1-2 in the axils of the leaves, deciduous bracts and distinctly jointed pods. (11)
  - g) Erect under-shrubs, with large leaves, racemose flowers and indistinctly jointed pods dehiscing in a continuous line along the ventral suture. (14)
- (1) Leaflets obovate obtuse or nearly rounded at the apex... *D. umbellatum*.  
 Leaflets obovately oblong, acute at the apex..... *D. Cephalotes*.
  - (2) ..... *D. pulchellum*.
  - (3) ..... *D. laburnifolium*.
  - (4) ..... *D. pseudo-triquetrum*.







- (11) *α*) Flowers all 1-3 together without a common peduncle in the axils of the leaves. .... *D. triflorum*.  
*β*) Flowers some racemed, the others pedicelled in the axils of the leaves. (12)  
*γ*) Flowers all in lax racemes. (13)  
 (12) Leaves 1-foliolate, leaflets broader than long, reniform. .. *D. reniforme*.  
 Leaves 3-foliolate, calyx-teeth and pedicels elongated. . . *D. heterophyllum*.  
 (13) ..... *D. parvifolium*.  
 (14) Branches scarcely woody, terminal leaflet usually 4-6 times as long as broad, pod glabrescent or inconspicuously downy. .... *D. gyrans*.  
 Branches woody, and leaflets 2-3 times as long as broad, pod loosely but copiously pubescent. .... *D. gyroides*.

*Species not mentioned in the Key.*

Very graceful, very slender, nearly filiformed, leaves simple, triangularly cordate, thinly chartaceous. .... *D. gracillimum*.

**Desmodium Cephalotes** WALL.; BAKER et HOOK. f. Fl. Brit. Ind. II. p. 161; HANCE in Journ. Bot. (1880), p. 260; MAXIM. in Mém. Biol. XII. p. 438; WIGHT Ic. Pl. Ind. Or. t. 373; FORBES et HEMSL. Ind. Fl. Sin. I. p. 171; MATSUM. et HAYATA Enum. Pl. Formos. p. 106.

HAB. Takow.

DISTRIB. Common in tropical Asia.

**Desmodium floribundum** G. DON; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 167; FORBES et HEMSL. Ind. Fl. Sin. I. p. 172.

HAB.

DISTRIB. China and India.

**Desmodium formosanum** HAYATA Materials for a Flora of Formosa p. 77. Branches nearly straight, albicant, dark-tomentose remotely foliate. Leaves trifoliolate, broadly ovate in outline, 10 cm. long including petioles, 7 cm. broad, terminal leaflet oblong-obovate, 6½ cm. long, 3½ cm. broad, rounded at the apex, aristate at the extremity, (arista 4 mm. long) obtuse at the base, slightly cuneate, entire, depressingly pilose above, shortly villose be-



neath, dark-tomentose on the costa and veins, costa and primary veins slightly above but prominently elevated beneath, primary veins 12 on both sides, slightly curved reaching the margin, veinlets between veins obliquely transverse, petiolules very short, 2 mm. long, rachis 1 cm. long, lateral leaflets equal oblong-elliptical slightly oblique at the base, roundly obtuse on the lower side, acute on the upper side, 4 cm. long, 2 cm. broad, petiolules 2 mm. long, stipels lanceolato-subulate, 4 mm. long, petioles  $1\frac{1}{2}$  cm. long, villosa-tomentose, stipules subulate, slightly recurved, base suddenly dilate, 1 cm. long, 3 mm. broad, villosely tomentose outside, glabrous inside. Flowers paniculately racemose, panicles 2 cm. long, 15 cm. broad, dark-tomentose, pedicels 3 mm. long, tomentose, bracts deciduous. Calyx 5-lobate, patent,  $5\frac{1}{2}$  mm. long, lobes equal  $4\frac{1}{2}$  mm. long, 2 mm. broad, caudately ovate, cuspidately acuminate at the apex, patently-tomentose, glabrous inside. Petals 5, nearly equal; standard broadly rotundate,  $7\frac{1}{2}$  mm. long,  $6\frac{1}{2}$  mm. broad, emarginate at the apex, broadly rotundate at the base, abruptly acute; wings oblong, obtuse at the base, auriculate on the upper side, keel boat-shaped, rounded at the apex, base narrowed auriculate on the upper side, staminal tube reddish, styles reflexed.

HAB. Banchoryō: Juchori, by G. NAKAHARA, Oct. 1905, (No. 586).

Near *Desmodium concinnum* DC.; but differs from it in having smaller bracts which are rounded at the base, and also in smaller stipules.

**Desmodium gangeticum** DC. Prodr. II. p. 327; BENTH. Fl. Hongk. p. 84; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 168; MAXIM. in Mém. Biol. XII. p. 443; WIGHT Ic. Pl. Ind. Or. t. 271; FORBES et HEMSL. Ind. Fl. Sin. I. p. 172; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Hozan.

DISTRIB. Widely spread in tropical Asia and Africa.

**Desmodium Gardneri** BENTH.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 165; MAXIM. in Mém. Biol. XII. p. 441; FORBES et HEMSL. Ind. Fl. Sin. I. p. 172; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB.

DISTRIB. Indian Peninsula, Ceylon and Japan.



**Desmodium gracillimum** HEMSL. in Ann. Bot. IX. p. 151; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Takow.

DISTRIB. An endemic plant.

**Desmodium gyrans** DC.; HENRY List Pl. Formos. p. 33; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Shōkwa.

DISTRIB.

**Desmodium gyroides** DC. Prodr. II. p. 326; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 175; MAXIM. in Mém. Biol. XII. p. 438; FORBES et HEMSL. Ind. Fl. Sin. I. p. 173; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB.

DISTRIB. Common in India and Malaya.

**Desmodium heterophyllum** DC. Prodr. II. p. 334; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 173; MAXIM. in Mém. Biol. XII. p. 445; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Tamsui.

DISTRIB. Tropical Asia and the Mascarene Islands.

**Desmodium laburnifolium** DC.; Prodr. II. p. 337; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 163; S. MOORE in Journ. Bot. (1875), p. 230; HANCE in Journ. Bot. (1878), p. 9; MAXIM. in Mém. Biol. XII. p. 439; FORBES et HEMSL. Ind. Fl. Sin. I. p. 173; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Pachina.

DISTRIB. Tropical India and Malaya.

**Desmodium latifolium** DC. Prodr. II. p. 328; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 168; WIGHT Ic. Pl. Ind. Or. p. 270; FORBES et HEMSL. Ind. Fl. Sin. I. p. 173; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB.

DISTRIB. In tropical Africa and Asia to the Philippines.

**Desmodium laxiflorum** DC. Prodr. II. p. 335; BAKER in HOOK. f.



Fl. Brit. Ind. II. p. 164; MAXIM. in Mél. Biol. XII. p. 440; FORBES et HEMSL. Ind. Fl. Sin. I. p. 173; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB.

DISTRIB. India, Malaya, the Philippines.

**Desmodium laxum** DC. Prodr. II. p. 336; ITÔ et MATSUM. Tent. Fl. Lutch. p. 415; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Pachina, Hikaku, Shizangan, Kussaku, Shintengai.

DISTRIB.

**Desmodium parvifolium** DC. Prodr. II. p. 334; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 174; BENTH. Fl. Hongk. p. 84; FORBES et HEMSL. Ind. Fl. Sin. I. p. 174; MATSUM. et HAYATA Enum. Pl. Formos. p. 107; HAYATA Fl. Mont. Formos. p. 74.

HAB. Taitô: Kalai, Suizan, Mt. Morrison.

DISTRIB. Widely distributed in India, Malay, and through central and southern China eastward to Japan.

**Desmodium podocarpum** DC. Prodr. II. p. 336; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 165; MAXIM. in Mél. Biol. XII. p. 440 (non HOOK. et ARN.); FORBES et HEMSL. Ind. Fl. Sin. I. p. 174; HAYATA Mater. Fl. Formos. p. 79.

HAB. Shintiku, Taihei.

DISTRIB. North India, Mandshuria, Loo-choo and Japan.

**Desmodium polycarpum** DC. Prodr. II. p. 334; HOOK. et ARN. Bot. Beech. Voy. p. 180; BENTH. Fl. Hongk. p. 84; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 171; MAXIM. in Mél. Biol. XII. p. 433; WIGHT Ic. Pl. Ind. Or. t. 406; FORBES et HEMSL. Ind. Fl. Sin. I. p. 175; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Kelung, Kagi, Shukukôshô.

DISTRIB. Tropical Asia, Polynesia, Japan.

**Desmodium pseudo-triquetrum** DC. Prodr. II. p. 326; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 413; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.



HAB. Taitō, Kilai.

DISTRIB.

**Desmodium pulchellum** BENTH. Fl. Hongk. p. 83; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 162; MAXIM. in Mém. Biol. XII. p. 438; FORBES et HEMSL. Ind. Fl. Sin. I. p. 172; MATSUM. et HAYATA Enum. Pl. Formos. p. 107.

HAB. Taitō. Hōzan.

DISTRIB. Tropical Asia and the Philippines.

**Desmodium reniforme** DC.; HOOK. f. Fl. Brit. Ind. II. p. 173; HENRY List Pl. Formos. p. 33; MATSUM. et HAYATA Enum. Pl. Formos. p. 107; HAYATA Mater. Fl. Formos. p. 79.

HAB. Banchoryō.

DISTRIB. India and Java.

OBSERV. Very slender scandent herb; leaves broadly reniformed,  $1\frac{1}{2}$  cm. long,  $2\frac{1}{2}$  cm. broad, glaucous beneath, membranaceous, stipules subulate, scaly, 5 mm. long; flowers on very long and slender racemes, very loosely arranged, very small, nearly 3 mm. long, shortly pedicelled.

**Desmodium sinuatum** Bl.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 116; HENRY List. Pl. Formos. p. 394; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB. Hikaku, Washa, Shintengai.

DISTRIB. All over the Tropics.

**Desmodium triflorum** DC. Prodr. II. p. 334; BENTH. Fl. Hongk. p. 83; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 173; MAXIM. in Mém. Biol. XII. p. 444; FORBES et HEMSL. Ind. Fl. Sin. I. p. 176; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB. Taihoku, Pachina, Hōzan.

DISTRIB. All over the Tropics.

**Desmodium umbellatum** DC. Prodr. II. p. 325; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 161; MAXIM. in Mém. Biol. XII. p. 438; FORBES et HEMSL. Ind. Fl. Sin. I. p. 177; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.



HAB. Pachina.

DISTRIB. Tropical Asia, Polynesia and the Mascarene Islands.

### 17. *Pycnospora* R. BR.

***Pycnospora hedysaroides*** R. BR.; BENTH. Fl. Hongk. p. 91; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 153; FORBES et HEMSL. Ind. Fl. Sin. I. p. 177; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB.

DISTRIB. Tropical Asia, Australia and the Philippines.

### 18. *Uraria* DESV.

*Dichotomous Key to the Formosan Species.*

Leaves 5-7-foliolate. (1)

Leaves 1-3-foliolate. (2)

(1) Leaflets elliptical, ovate or elongately elliptical. .... *Uraria crinita*.

Leaflets linear, coloured. .... *Uraria picta*.

(2) Heads short, dense, oblong-cylindrical, lower calyx-teeth

elongated. .... *Uraria lagopoides*.

Heads long, lax, cylindrical, lower calyx-teeth not

elongated. .... *Uraria hamosa*.

***Uraria crinita*** DESV., DC.; Prodr. II. p. 324; BENTH. Fl. Hongk. p. 81; FORBES et HEMSL. Ind. Fl. Sin. I. p. 177; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB. Pachina.

DISTRIB. Common in tropical Asia.

***Uraria hamosa*** WALL.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 156; FORBES et HEMSL. Ind. Fl. Sin. I. p. 177.

Var. ***formosana*** MATSUM. in Itô et MATSUM. Tent. Fl. Lutch. p. 411; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB. Taitō.

DISTRIB.

***Uraria lagopoides*** DC. Prodr. II. p. 324; HANCE in Journ. Bot. (1872)



p. 226; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 156; FORBES et HEMSL. Ind. Fl. Sin. I. p. 178; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB.

DISTRIB. Tropical Asia, Australia and Polynesia.

**Uraria picta** DESV.; DC. Prodr. II. p. 324; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 155; FORBES et HEMSL. Ind. Fl. Sin. I. p. 178; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB.

DISTRIB. Tropical Africa and Asia, to the Philippines and Australia.

### 19. *Lourea* NECK.

**Lourea obcordata** DESV.; DC. Prodr. II. p. 324; BENTH. Fl. Hongk. p. 82; FORBES et HEMSL. Ind. Fl. Sin. I. p. 178; MATSUM. et HAYATA Enum. Pl. Formos. p. 108.

HAB. Tamsui.

DISTRIB. Malaya, tropical Australia and the Philippines.

### 20. *Alysicarpus* NECK.

*Dichotomous Key to the Formosan Species.*

- (1) Leaves linear. .... *A. bupleurifolius*.  
 Leaves broadly oblong. .... *A. vaginalis*.

**Alysicarpus bupleurifolius** DC. Prodr. II. p. 352; BENTH. Fl. Hongk. p. 81; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 188; FORBES et HEMSL. Ind. Fl. Sin. I. p. 178; MATSUM. et HAYATA Enum. Pl. Formos. p. 108; HAYATA Materials for a Flora of Formosa p. 79.

HAB. Akō, Kotanshō.

DISTRIB. Hongkong; tropical Asia, the Mascarene islands and Polynesia.

A shrubby herb, 40–50 cm. long, decumbent, many-branched; leaves alternate, linear, 5 cm. long, 2–3 mm. broad, shortly petioled, stipules sheath-like lanceolate, scaly; calyx 6–7 mm. long, deeply lobed, lobes lanceolate, scaly; pods long, 1½ cm.–2 cm. long, 5-jointed, cut into each joint when ripe.



**Alysicarpus vaginalis** DC. Prodr. II. p. 353; BENTH. Fl. Hongk. p. 80; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 158; FORBES et HEMSL. Ind. Fl. Sin. I. p. 179; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Tamsui, Shinshō, Biōritsu, Hakkōkō.

DISTRIB. Tropics of the Old World.

## 21. *Lespedeza* MICHX.

*Dichotomous Key to the Formosan Species.*

- (1) Scandent or nearly scandent. (2)  
Erect shrubs (3)
- (2) Flowers axillary, clustered. .... *Lespedeza chinensis*.  
Flowers in long racemes. .... *Lespedeza virgata*.
- (3) Flowers in axillary clusters (4)  
Flowers in long racemes. (5)
- (4) Stipules very small, leaves obovately linear ..... *L. juncea*.  
Stipules large, ovate, leaves obovate. .... *L. striata*.
- (5) Flowers long pedicelled on the racemes. .... *L. macrocarpa*.  
Flowers very shortly pedicelled or nearly sessile. .... *L. pubescens*.

**Lespedeza chinensis** G. DON; HOOK. et ARN. Bot. Beech. Voy. p. 181; FORBES et HEMSL. Ind. Fl. Sin. I. p. 180; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Tamsui.

DISTRIB. China.

**Lespedeza juncea** PERS.; DC. Prodr. II. p. 348; FRANCHET Pl. David. p. 96; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 142; FORBES et HEMSL. Ind. Fl. Sin. I. p. 181; var. **sericea** MIQ. in Ann. Mus. Bot. Lugd.-Bat. p.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 181; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Kinpori.

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The plant mentioned as *Lespedeza Buergeri* MIQ. var. *Oldhami* MAXIM. in Itō et MATSUM. Tent. Fl. Lutch. p. 405, and in MATSUM. et HAYATA Enum. Pl. Formos. p. 105 is not identical with the named variety, and therefore it should be excluded from the flora of the island.



DISTRIB. India, Japan, Australia.

**Lespedeza macrocarpa** BUNGE; FRANCHET Pl. David. p. 94; FORBES et HEMSL. Ind. Fl. Sin. I. p. 182. Shrub, glabrous, branched. Leaves pinnate, tri-foliolate, pinnæ oblongo-obovate, apex roundly retuse, shortly mucronate, dark above when dried, but pallidly glaucous beneath, reticulately venose terminal leaflet  $3\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. broad, petiolule 1 cm. long, lateral ones a little smaller,  $2\frac{1}{2}$  cm. long, petiolules 2 mm. long, petioles 2 cm. long, stipules subulate, scaly, 4 mm. long, stipels obsolete or very small. Flowers racemoso-paniculate. Calyx campanulate, 5 mm. long, pubescent, 5-fid, lobes 2-superior connate, 3-lower ones linear or subulate, 3 mm. long. Standard obovate, 12 mm. long, 7 mm. broad, obtuse at the apex, gradually narrowed at the base; wings linear, 12 mm. long, (claw slender, linear, 3 mm. long), slightly auriculate above the claw, blades 9 mm. long, 4 mm. broad, obtuse at the apex; keel narrowed, incurved, rostrate, clawed, claws 3 mm. long, blade nearly 10 mm. long, 2 mm. broad. Ovary cylindrical complanate, 3 mm. long, narrowed at the apex to the style, 2-ovulate, pubescent, style long, 10 mm. long, incrassate above the middle. Pods complanate, membranaceous, reticulately venose, 1 seeded.

HAB. Toroku, Tôhozan.

DISTRIB. China: Peking, Hupeh.

**Lespedeza pubescens** HAYATA Materials for a Flora of Formosa p. 80. Shrub, subglabrous. Leaves alternate, 3-leaved, terminal leaflet oblong, acute on both ends, shortly mucronate at the apex,  $2\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. broad, lateral ones a little smaller, petiolules 2 mm. long, pubescent, petioles 3 cm. long, subglabrous, leaflets nigricant glabrous, above pallid-glaucous beneath, depressingly pubescent. Panicles terminal, profusely flowered, branches 7-8 cm. long, flowers shortly pedicellate, pedicels 3 mm. long. Calyx 4 mm. long, depressingly pubescent, 5-lobed, (lobes oblong, 2 mm. long, 2-upper ones connate, 3-lower ones distinct), 2-bracteolate at the base, bracteoles ovate,  $\frac{1}{2}$  mm. long. Standard 17 mm. long, clawed, claw 2 mm. long,  $2\frac{1}{2}$  mm. broad, blade obovate, 7 mm. long,  $6\frac{1}{2}$  mm. broad, round or emarginate at the apex, slightly auriculate at the base; wings 10 mm. long, shorter than the



keel, clawed, claws 4 mm. long, linear, blades long obovate, 6 mm. long, rounded at the apex, auriculate at the base on the upper side; keel boat-shaped, claws 4 mm. long, blades 8 mm. long,  $3\frac{1}{2}$  mm. broad. Pods not known.

HAB. Nantō: Mushazan; Byōritsu; Bunsuiga.

Somewhat near *L. Oldhami* MIQ.; but distinguished by the shape of flowers and in many other points. Also near *L. Viatorum* CHAMP., but differs in having more obtuse lobes of the calyx.

***Lespedeza striata*** HOOK. et ARN. Bot. Beech. Voy. p. 262; BENTH. Fl. Hongk. p. 85; FORBES et HEMSL. Ind. Fl. Sin. I. p. 182; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Kelung, Taihoku.

DISTRIB. Mandshuria and Japan.

***Lespedeza virgata*** DC. Prodr. II. p. 350; FORBES et HEMSL. Ind. Fl. Sin. I. p. 183; MATSUM. et HAYATA Enum. Pl. Formos. p. 105.

HAB. Kilai, Taitō.

DISTRIB. Japan.

## 22. *Vicia* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Pods two seeded. .... *Vicia hirsuta*.  
 Pods more than two seeded, sometimes 4, sometimes 6 or more than 6  
 ..... (2)
- (2) Pods 4-seeded. .... *Vicia tetrasperma*.  
 Pods more than 4-seeded. (3)
- (3) Leaflets smaller, cuneate or linear, emarginate and aristate at the apex.  
 ..... (4)  
 Leaflets larger, lanceolate, obtuse at the apex, very shortly aristate. ....  
 ..... *Vicia Cracca*.
- (4) Leaflets obovate, cuneate. .... *Vicia sativa*.  
 Leaflets linear. .... *Vicia angustifolia*.

***Vicia angustifolia*** ROTH.; FRANCHET Pl. David. p. 98; FORBES et



HEMSL. Ind. Fl. Sin. I. p. 184; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Gyakalon.

DISTRIB. Europe, North Africa and Asia.

**Vicia Cracca** LINN.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 184; HAYATA Materials for a Flora of Formosa p. 81. Scandent, greenish, glabrous, striate. Leaves sessile, alternate, 12 cm. long, 5 cm. broad, pinnate, 7-9 juged, cirrhate at the apex, tendrils 3-fid, pinnæ lanceolately linear,  $2\frac{1}{2}$  cm. long, 5 mm. broad, rounded on both ends, shortly aristate at the apex, petiolules pubescent, rhachis glabrous, lowest pinnæ reflexed, stipules lanceolate, pubescent, 6 mm. long. Flowers spicate, spikes axillary, 10 cm. long, floriferous upwards from the middle. Flowers 13 mm. long, pedicels 2 mm. long. Calyx tubuliformed, oblique at the base, gibbose above, 5-dentate, tube 3 mm. long, equally broad, teeth 2-upper ones shortest, broadest, 2-side-ones cuspidate,  $1\frac{1}{2}$  mm. long, lowest tooth linear, 2 mm. long. Standard ovate, 13 mm. long, 6 mm. broad, base not clawed, emarginate at the apex; wings 14 mm. long, clawed, claws 6 mm. long, linear, blades narrowed, 9 mm. long,  $2\frac{1}{2}$  mm. broad, rounded at the apex, auriculate at the base on the upper side; keel much shorter than wings, boat-shaped, clawed, 6 mm. long, blades 4 mm. long, 2 mm. broad, truncate at the apex, auriculate at the base on the upper side. Ovary long stipitate (stalks 3 mm. long), 6-seeded.

HAB. Taitō.

DISTRIB. Europe, North Africa, Asia, and North America.

**Vicia hirsuta** KOCH; FRANCHET Pl. David. p. 99; FORBES et HEMSL. Ind. Fl. Sin. I. p. 184; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Shōkwa.

DISTRIB. Europe, North Africa and Asia.

**Vicia sativa** LINN.; DC. Prodr. II. p. 360; HANCE in Journ. Bot. (1883), p. 297; FORBES et HEMSL. Ind. Fl. Sin. I. p. 185; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Bōryō.



DISTRIB. A native of the Mediterranean region; widely colonized everywhere through cultivation.

**Vicia tetrasperma** MOENCH.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 185; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Heichōshō.

DISTRIB. Europe, Africa and Asia; Japan.

### 23. *Pisum* LINN.

**Pisum sativum** LINN.; ITÔ et MATSUM. Tent. Fl. Lutch. p. 419; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Tamsui (cultivated).

DISTRIB.

### 24. *Abrus* LINN.

**Abrus precatorius** LINN.; DC. Prodr. II. p. 381; HOOK. et ARN. Bot. Beech. Voy. p. 181; BENTH. Fl. Hongk. p. 92; FORBES et HEMSL. Ind. Fl. Sin. I. p. 187; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Tainan, Takow.

DISTRIB. All over the tropics.

### 25. *Clitoria* LINN.

**Clitoria Ternatea** LINN.; DC. Prodr. II. p. 233; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 208; FORBES et HEMSL. Ind. Fl. Sin. I. p. 188; MATSUM. et HAYATA Enum. Pl. Formos. p. 112.

HAB. Takow, Hōzan, Tainan.

DISTRIB. Common in tropical countries.

### 26. *Dumasia* DC.

**Dumasia bicolor** HAYATA Fl. Mont. Formos. p. 75. Herb voluble entirely pubescent. Leaves bicolour, pubescent, pinnately 3-foliolate, 12 cm. broad, 18 cm. long, long petioled, petioles base incrassate, 9 cm. long, lateral leaflets shortly petiolulate, petiolules 3 mm. long, blades roundly ovate, base truncate or acute, rounded at the apex, minutely aristately mucronate, 3-



nerved, terminal leaflet long petiolulate, (petiolules  $2\frac{1}{2}$  cm. long), blade ovate, base acute, larger,  $6\frac{1}{2}$  cm. long,  $4\frac{1}{2}$  cm. broad, stipules setaceous, stipels filiformed, minute, sometimes upper leaves simple. Flowers arranged on a axillary racemes which are 10 cm. long, bracts small, narrowed, bracteoles minute. Calyx-tube cylindraceous, 9 mm. long, base gibbose on the back, mouth strongly oblique, truncate, acute on the front. Standard obovate, emarginate at the apex, 14 mm. long, 7 mm. broad, broadly unguiculate, blade as long as the claw, inflexed backwards above the middle, base auricled and narrowed reaching the claw; wings long unguiculate, 14 mm. long, blades oblong, claws linear, 2-times as long as the blades, adherent to the keel; keel shorter than wings, obtuse. Stamens, one free, others connate; anthers uniformed. Ovary villose, substipitate, stalk 1 mm. long; style filiformed, erect, dilate above the middle, inflexed towards the apex, subulate, beardless, stigma terminal. Pod sessile, villose, always 1-seeded.

HAB. Suizan, Morrison.

The present plant is, in all respects, like *D. villosa* DC. But in this species, the seed is always one in each pod and the standard has a distinct spurs on both sides of the lamina. Accordingly, I think the plant is specifically separable from *D. villosa* DC. The leaves of the specimen, upon which the above description is based, are of a thinly hairy form. Here is another form with villose leaves which are much smaller than the leaves of the other form. The villose form seems to be a young stage of the other.

## 27. *Glycine* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Erect, leaflets rhomboid ..... *Glycine hispida*.  
Scandent, leaflets linear, lanceolate or oblong. (2)
- (2) Pubescent hirsute or nearly glabrous. Leaflets of the lowest leaves short and broad, of the upper ones ovate-lanceolate, lanceolate or almost linear. .... *G. tabacina*.  
Softly tomentose or villous. Leaflets ovate or oblong, all obtuse.  
..... *G. tomentosa*.



**Glycine hispida** MAXIM. in Mém. Biol. IX. p. 70; FRANCH. et SAV. Enum. Pl. Jap. I. p. 108; FRANCHET Pl. David. p. 100; FORBES et HEMSL. Ind. Fl. Sin. I. p. 188; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Hōzan Shintiku.

DISTRIB. cultivated in Asia.

**Glycine tabacina** BENTH. Fl. Austral. II. p. 244; WALP. Ann. VII. p. 780; HANCE in Journ. Bot. (1878), p. 165; FORBES et HEMSL. Ind. Fl. Sin. I. p. 189; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB.

DISTRIB. Very widely diffused in Australia.

**Glycine tomentosa** BENTH. Fl. Austral. II. p. 245; WALP. Ann. VII. p. 780; HANCE in Journ. Bot. (1878), p. 105; FORBES et HEMSL. Ind. Fl. Sin. I. p. 189; MATSUM. et HAYATA Enum. Pl. Formos. p. 109.

HAB. Shintiku, Byōritsu.

DISTRIB. Philippines, southern China and eastern Australia.

## 28. *Erythrina* LINN.

**Erythrina indica** LAM.; DC. Prodr. II. p. 412; BAKER in Hook. f. Fl. Brit. Ind. II. p. 188; FORBES et HEMSL. Ind. Fl. Sin. I. p. 179; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Kōtōshō, Shitiku, Toseikaku, Hōzan, Bōryō.

DISTRIB. In Tropical Asia, and cultivated in other countries.

## 29. *Apios* MOENCH.

**Apios Fortunei** MAXIM. in Mém. Biol. IX. p. 67; FORBES et HEMSL. Ind. Fl. Sin. I. p. 189; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB.

DISTRIB. Japan.

## 30. *Mucuna* ADANS.

*Dichotomous Key to the Formosan Species.*

- (1) Pod smaller, 10 cm. in length, 6-ribbed. .... *M. capitata*.  
 Pod very much larger, longer than 40 cm. .... *M. ferruginea*.



**Mucuna capitata** WALP. et ARN.; MIQ. Fl. Ind. Bat. I. p. 212; MIQ. Prol. p. 240; FRANCH. et SAV. Enum. Pl. Jap. I. p. 109; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 187; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 420; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Taitō: Kilai.

DISTRIB.

**Mucuna ferruginea** MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 422; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Suiteiryō.

DISTRIB.

### 31. *Galactia* P. BR.

#### *Key to the Formosan Species.*

- (1) Leaves fleshy roundly obovate or nearly rounded.

..... *Galactia Tashiroi*.

Leaves thinner, oblong..... *G. formosana*.

**Galactia formosana** MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 424; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Taitō.

DISTRIB. An endemic plant.

**Galactia Tashiroi** MAXIM. in Mél. Biol. XII. p. 446; FORBES et HEMSL. Ind. Fl. Sin. I. p. 191; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Kōtōshō.

DISTRIB. Loo-choo.

### 32. *Pueraria* DC.

#### *Dichotomous Key to the Formosan Species.*

- (1) Stipule peltately affixed produced under the insertion, lobes of the calyx longer than the tube. Legumen complanate, broader.

..... *Pueraria Thunbergiana*.



Stipule not produced beyond the insertion. Legumen narrowed, subterete pilose. .... *Pueraria phaseoloides*.

***Pueraria phaseoloides*** BENTH. in Journ. Linn. Soc. IX. p. 125; HANCE in Journ. Linn. Soc. XIII. p. 102; BAKER in Hook. f. Fl. Brit. Ind. II. p. 199; FORBES et HEMSL. Ind. Fl. Sin. I. p. 190; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB.

DISTRIB. Widely diffused in tropical Asia.

***Pueraria Thunbergiana*** BENTH. in Journ. Linn. Soc. IX. p. 122; HANCE in Journ. Bot. (1874), p. 259, et in Journ. Linn. Soc. XIII. p. 102; FORBES et HEMSL. Ind. Fl. Sin. I. p. 191; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. Kelung, Shintiku, Kusshaku, Shintengai.

DISTRIB. Common in Japan.

### 33. *Canavalia* ADANS.

*Dichotomous Key to the Formosan Species.*

- (1) Leaves or leaflets usually emarginate. .... *C. lineata*.  
       Leaves or leaflets acute or obtuse. (2)
- (2) Leaflets usually acute. .... *C. ensiformis*.  
       Leaflets obtuse. .... *C. obtusifolia*.  
       (The distinction of the above three species is not always very clear).

***Canavalia ensiformis*** DC. Prodr. II. p. 404; BAKER in Hook. f. Fl. Brit. Ind. II. p. 195; FORBES et HEMSL. Ind. Fl. Sin. I. p. 192; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB.

DISTRIB. Generally diffused in the tropics.

***Canavalia lineata*** DC. Prodr. II. p. 404; MATSUM. in Itō et MATSUM. Tent. Fl. Lutch. p. 425; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Bōryō.

DISTRIB. Tropical sea-shores.



**Canavalia obtusifolia** DC. Prodr. II. p. 404; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 196; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 192; MATSUM. et HAYATA Enum. Pl. Formos. p. 110.

HAB. Kelungtō, Suitenkwa, Tamsui, Agincort.

DISTRIB. Common on tropical sea-shores.

### 34. *Phaseolus* LINN.\*

*Dichotomous Key to the Formosan Species.*

- (1) Pod elongately oblong flattened 8 cm. long, 3 cm. broad, acute at both ends, shortly rostrate at the apex, thinly velutinous, leaves rhomboidal, acuminate towards the apex, obtuse at the very tip.  
.....*Phaseolus lunatus*.
- (2) Pod linear terete or complanate, nearly 6 cm. long, 6 mm. broad, leaves various. (3)
- (3) Erect herb. ....*P. radiatus* var. *typica*.  
Scandent herbs. (4)
- (4) Stem nearly glabrous much slender, leaves much smaller, slightly pubescent. ....*P. trilobus*.  
Stem hirsute, best with long reflexed hairs, much stouter, leaves much larger, hispid above, pubescent beneath. .... *P. Mungo*.

**Phaseolus lunatus** LINN.; DC. Prodr. II. p. 393; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 200; MATSUM. in Tōkyō Bot. Mag. XII. p. 61; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. Taichū.

DISTRIB.

**Phaseolus Mungo** LINN.; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB.

DISTRIB.

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\* Species belonging to this genus and *Vigna* are rather confounded in the Formosan plants. It is much to be desired that a careful revision on these two genera should be done with perfect materials.



**Phaseolus radiatus** LINN. var. **typica** D. PRAIN; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 427; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. cultivated.

DISTRIB.

**Phaseolus trilobus** AIT.; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 427; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. Hikaku.

DISTRIB.

### 35. *Vigna* SAV.

*Dichotomous Key to the Formosan Species.*

- (1) Plants nearly glabrous or pubescent. (2)  
Plants hispid with long hairs. (4)
- (2) Leaflets ovate, rounded or emarginate at the apex, or rhomboidal always rounded or obtuse at the apex. .... *Vigna lutea*.  
Leaflets usually acute or acuminate at the apex. (3)
- (3) Leaflets lanceolate or ovately lanceolate. .... *Vigna luteola*.  
Leaflets rhomboidal, broadest at the base, acuminate at the apex. ....  
..... *Vigna sinensis*.
- (4) Leaflets not sinuate, entire. .... *Vigna reflexo-pilosa*.  
Leaflets sinuate. .... *Vigna stipulata*.

**Vigna lutea** A. GRAY; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 205; FORBES et HEMSL. Ind. Fl. Sin. I. p. 193; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. Kelung, Takow.

DISTRIB. Generally on the sea-shores of the tropics.

**Vigna luteola** BENTH. Fl. Austral. II. p. 260; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 205; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 428; MATSUM. et HAYATA Enum. Pl. Formos p. 111.

HAB. Maruyama, Pachina, Hôzan, Taitô.

DISTRIB.



**Vigna pilosa** BAKER; HENRY List Pl. Formos. p. 36; MATSUM. et HAYATA Enum. Pl. Formos. p. 112.

The species is not yet represented in our Herbarium.

**Vigna reflexo-pilosa** HAYATA Materials for a Flora of Formosa p. 82. Branches striate, terete, hispid, hairs yellowish, reflexed. Leaves trifoliate, long petiolate broadly triangular in outline, terminal leaflet rhomboid-ovate,  $8\frac{1}{2}$  cm. long, 5 cm. broad, abruptly acute at the apex, roundly acute at the base, margin repandately entire or entire, costa and veins slightly elevate on both sides, pallid beneath, hispid on both sides, trinerved at the base, petiolules 3 mm. long, stipules lanceolate, coriaceous, reflexed, 2-4 mm. long, rhachis 2 cm. long, lateral leaflets a little larger than the terminal one, obliquely ovate, broader on the lower side, truncately rounded at the base, petioles 7 cm. long, reflexo-pilose, stipules oblong, 1 cm. long including auricles, 3 mm. broad, many-nerved, acute, ciliate pilose on the margin and surfaces, peltately auriculate at the base, (auricles 3 mm. long, rounded at the extremity). Racemes axillary, 3 cm. long, long pedunculate, peduncles 13 cm. long, reflexly pilose, pedicels 1 cm. long, bracts nearly equal as the stipule, 2 bracteolate at the apex of the pedicels, bracteoles lanceolate,  $4\frac{1}{2}$  mm. long, acuminate, carinate at the middle, shortly pubescent outside, glabrous inside. Calyx broadly campanulate, 3 mm. long, shortly 2-lobate, denticulately ciliate on the margin, upper-lobe broadest emarginate, lower-lobe 3-lobulate, lobules triangular, acute. Pods linear, scabrous.

HAB. Kagi: Kishiri, (1767).

Near *Vigna Catiang*, differs from it by much more hairy leaves and stems. There is, at Kew, a specimen unnamed which is exactly the same as the present plant.

**Vigna sinensis** HASSK.; WALP. Ann. IV. p. 562; FORBES et HEMSL. Ind. Fl. Sin. I. p. 193; HAYATA Materials for a Flora of Formosa p. 83.

*Vigna Catiang* ENDL. var. *sinensis* KING; MATSUM. et HAYATA Enum. Pl. Formos. p. 111.

HAB. Nikusui, by T. KAWAKAMI, July, 1907, (No. 4244).



DISTRIB. Commonly cultivated in the tropics; perhaps a native in some parts of China.

**Vigna stipulata** HAYATA Materials for a Flora of Formosa p. 83. Scandent, slender, strigose, hairs reflexed, 2 mm. long, branches of spikes tomentose, hairs strigose. Leaves alternate, 3-foliolate, somewhat hispid, terminal leaflet rhomboid 3-lobed, trinerved, 4 cm. long,  $3\frac{1}{2}$  cm. broad, lateral lobes same as the terminal, petioles 5 mm. long, stipellate, (stipels linear, 7 mm. long), stipulate, stipules auriformed, peltate, affixed at the middle, radiately nerved, 1 cm. long, 4 mm. broad, acute at the apex, rounded at the base. Flowers spicate, spikes terminal. Pods linear  $4\frac{1}{2}$  cm. long, 5 mm. broad, nearly 13-seeded, nigricant, valves tortuose, hairs short strigose. Seeds tetragonous, angulate, 3 mm. long.

HAB. Dakusui.

Remarkable for its peltate stipules; leaflets sometimes are entire but not lobed.

### 36. *Pachyrrhizus* RICH.

**Pachyrrhizus angulatus** RICH. in DC. Prodr. II. p. 402; BAKER in Hook. f. Fl. Brit. Ind. II. p. 207; Hook. et ARN. Bot. Beech. Voy. p. 184; FORBES et HEMSL. Ind. Fl. Sin. I. p. 194; MATSUM. et HAYATA Enum. Pl. Formos. p. 112; HAYATA Materials for a Flora of Formosa p. 84.

HAB. Akō: Tōkō.

DISTRIB. In the tropics; southern China.

OBSERV. Scandent; leaves trifoliolate, terminal leaflet broadly ovate, twice as broad as long, angulate, abruptly and shortly acute, obtuse at the very end, 10 cm. long, 18 cm. broad, trinerved, stipellate, pale beneath, nearly glabrous, lateral leaflets nearly as the same as the terminal one, but very oblique; flowers in a terminal raceme; flowers 2 cm. long, calyx silky-pubescent.

### 37. *Psophocarpus* NECK.

**Psophocarpus tetragonolobus** DC. Prodr. II. p. 403; BAKER in Hook. f. Fl. Brit. Ind. II. p. 211; FORBES et HEMSL. Ind. Fl. Sin. I. p. 194; *P. palustris* MATSUM. et HAYATA Enum. Pl. Formos. p. 112.



HAB. Bongalisha.

DISTRIB. Cultivated in the Tropics of the Old World.

### 38. *Dolichos* LINN.

***Dolichos Lablab*** LINN.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 209; FORBES et HEMSL. Ind. Fl. Sin. I. p. 194; MATSUM. et HAYATA Enum. Pl. Formos. p. 112.

HAB. Taihoku.

DISTRIB. Tropics of the Old World.

***Dolichos trilobatus*** WALL. ? HENRY List Pl. Formos. p. 37; MATSUM et HAYATA Enum. Pl. Formos. p. 112.

The species is not yet represented in our Herbarium.

DISTRIB.

### 39. *Cajanus* DC.

***Cajanus indicus*** SPRENG; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 217; BENTH. Fl. Hongk. p. 89; MAXIM. in Mém. Biol. XII. p. 447; Bot. Mag. t. 6440; FORBES et HEMSL. Ind. Fl. Sin. I. p. 195; MATSUM. et HAYATA Enum. Pl. Formos. p. 113; HAYATA Fl. Mont. Formos. p. 77.

HAB. Tôhoshu.

DISTRIB. Commonly cultivated all over the tropics.

### 40. *Atylosia* W. et ARN.

***Atylosia scarabæoides*** BENTH. Fl. Hongk. p. 90; BAKER in HOOK. f. Fl. Brit. Ind. I. p. 215; FORBES et HEMSL. Ind. Fl. Sin. I. p. 195; MATSUM. et HAYATA Enum. Pl. Formos. p. 112.

HAB. Takow, Hôzan, Soobonsha.

DISTRIB. Tropical Asia.

### 41. *Rhynchosia* LOUR.

*Dichotomous Key to the Formosan Species.*

- (1) Leaflets smaller, less than 2 cm., slightly pubescent or nearly glabrous.  
 .....*Rhynchosia minima*.



Leaflets larger, more than 3 cm., densely villose or pubescent, (2)

- (2) Pods short, 1-1½ cm. long. .... *R. volubilis*.  
 Pods longer, 2½-3 cm. long. .... *R. sericea*.

**Rhynchosia minima** DC. Prodr. II. p. 385; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 223; MAXIM. in Mém. Biol. XII. p. 447; MATSUM. et HAYATA Enum. Pl. Formos. p. 113.

HAB. Takow.

DISTRIB. All over the tropics.

**Rhynchosia sericea** SPAN.; HENRY List Pl. Formos. p. 37; MATSUM. et HAYATA Enum. Pl. Formos. p. 113.

HAB.

DISTRIB.

**Rhynchosia volubilis** LOUR.; DC. Prodr. II. p. 385; BENTH. Fl. Hongk. p. 90; MAXIM. in Mém. Biol. IX p. 70; FORBES et HEMSL. Ind. Fl. Sin. I. p. 196; MATSUM. et HAYATA Enum. Pl. Formos. p. 113.

HAB. Byōritsu, Sharyōto, Shizangan.

DISTRIB. Japan

## 42. *Flemingia* ROXB.

*Dichotomous Key to the Formosan Species.*

- (1) Shrubs. Leaves simple. Flowers in small cymes, each hidden by a large folded persistent bract, closely distichously arranged in copious simple or slightly branched racemes, both in the axils of the leaves and above them. .... *Flemingia strobilifera*.  
 Erect shrubs. Leaves digitately 3-foliolate. Flowers in dense subspicate axillary racemes; bracts deciduous. (2)
- (2) Branches triquetrous, leaflets thin large acuminate obscurely silky on the ribs below, bracts linear firm much exceeding the buds, calyx silky. .... *F. stricta*.  
 Branches subterete, leaflets oblong acuminate silky on the ribs below, bracts neither rigid nor protracted, calyx silky. .... *F. congesta*.



**Flemingia congesta** ROXB.; DC. Prodr. II. p. 351; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 228; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 433; MATSUM. et HAYATA Enum. Pl. Formos. 113.

HAB. Shintiku, Hōzan.

DISTRIB. Common in the tropical Asia and Africa.

**Flemingia stricta** ROXB.; DC. Prodr. II. p. 351; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 228; FORBES et HEMSL. Ind. Fl. Sin. I. p. 197; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 433; MATSUM. et HAYATA Enum. Pl. Formos. p. 113.

HAB. Taichū: Tōseikaku.

DISTRIB. Tropical regions of India.

**Flemingia strobilifera** R. BR.; ITÔ et MATSUM. Tent. Fl. Lutch p. 432; MATSUM. et HAYATA Enum. Pl. Formos. p. 113; HAYATA Fl. Mont. Formos. p. 77.

HAB. Suizan, Mt. Morrison, Tainan Takow, Hōzan.

DISTRIB. The Himalayas, Ceylon, east Pengal, Burma, Malacca, Malayr and the Philippine islands.

There is a little doubt about identifying mountain specimen with the above species. In *F. strobilifera* R. BR., the flowers are arranged in a raceme or a short spike within a large bract, while in the specimen from the mountains the flowers are a very few but not so numerous as to form eithe, raceme or spike.

#### 43. *Dalbergia* LINN.

**Dalbergia rubiginosa** ROXB.; Fl. Ind. III. p. 231; BENTH. Fl. Hongk. p. 93; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 232; FORBES et HEMSL. Ind. Fl. Sin. I. p. 198; MATSUM. et HAYATA Enum. Pl. Formos. p. 113.

HAB.

DISTRIB. Hongkong. Western peninsula of India.

#### 44. *Derris* LOUR.

*Dichotomous Key to the Formosan Species.*

(1) Leaves glabrous. (2)

Leaves more or less hairy. (3)



- (2) Leaflets oblong or obovate acute or obtuse at the apex. .... *D. laxiflora*.  
 Leaflets ovate acuminate at the apex. .... *D. uliginosa*.  
 (3) Leaflets large 14 cm. in length. .... *D. chinensis*.  
 Leaflets small, less than 8 cm. in length. (4)  
 (4) Calyx nearly truncate. .... *D. oblonga*.  
 Calyx toothed. .... *D. elliptica*.

**Derris chinensis** BENTH. in Journ. Linn. Soc. IV. Suppl. p. 104, et Fl. Hongk. p. 94; FORBES et HEMSL. Ind. Fl. Sin. I. p. 199; MATSUM. et HAYATA Enum. Fl. Formos. p. 114.

HAB. Senton, Tōseikaku, Kagi.

DISTRIB. South China.

**Derris elliptica** BENTH.; HAYATA Materials for a Flora of Formosa p. 84.

HAB. Jinkakurin.

DISTRIB. India, Siam, Malay Archipelago.

**Derris laxiflora** BENTH. in Journ. Linn. Soc. IV. Suppl. p. 105; FORBES et HEMSL. Ind. Fl. Sin. I. p. 199; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Kōketsuzan, Kelung.

DISTRIB. An endemic plant.

**Derris oblonga** BENTH.; HAYATA Materials for a Flora of Formosa p. 84.

HAB. Kōtōshō.

DISTRIB. Southern China.

**Derris uliginosa** BENTH. in Journ. Linn. Soc. IV. Suppl. p. 108, et Fl. Hongk. p. 94; BAKER in HOOK. f. Fl. Brit. Ind. III. p. 241; FORBES et HEMSL. Ind. Fl. Sin. I. p. 199; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Takow.

DISTRIB. Common in tropical Asia, eastern Africa, Mascarene Islands, Polynesia and northern Australia.



45. *Pongamia* VENT.

**Pongamia glabra** VENT.; DC. Prodr. II. p. 416; BENTH. in Journ. Linn. Soc. IV. Suppl. p. 115, et Fl. Hongk. p. 94; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 240; FORBES et HEMSL. Ind. Fl. Sin. I. p. 200; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Kelung, Bôryô, Fukô.

DISTRIB. Common on the sea-shores in the Tropics of the Old World.

46. *Euchresta* BENN.

**Euchresta Horsfieldii** BENN.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 248; MAXIM. in Mém. Biol. XII. p. 448; FORBES et HEMSL. Ind. Fl. Sin. I. p. 200; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Taisuikutsu.

DISTRIB. Loo-choo, eastern India and Java.

47. *Sophora* LINN.

*Dichotomous Key to the Formosan Species.*

Plants tomentose, leaflets obovate incrassate. . . . . *Sophora tomentosa*.

Plants nearly glabrous, leaflets slightly pubescent elongate lanceolate  
or elliptical. . . . . *Sophora flavescens*.

**Sophora flavescens** AIT.; WILLD. Sp. Pl. II. p. 499; DC. Prodr. II. p. 96; FRANCHET Pl. David. p. 100; FORBES et HEMSL. Ind. Fl. Sin. I. p. 202; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Holisha.

DISTRIB. China, Dahuria to Japan.

**Sophora tomentosa** LINN.; DC. Prodr. II. p. 95; FORBES et HEMSL. Ind. Fl. Sin. I. p. 203; MATSUM. et HAYATA Enum. Pl. Formos. p. 114; HAYATA Materials for a Flora of Formosa p. 85.

HAB. Kôtôshô.

DISTRIB. Very widely dispersed on the sea-shores of the tropics.



OBSERV. Shrubby, profusely branched, velvety pubescent all over the plant; leaves pinnate, 7-8 juged, imparipinnate, 15 cm. long, leaflets oblong, round at both ends, 3 cm. long, 2 cm. broad, silky pubescent on both surfaces, at length glabrous on the upper surface, pale yellow in a dry specimen; racemes terminal; flowers  $1\frac{1}{2}$  cm. long; calyx campanulate, silky pubescent, nearly truncate or shortly dentate.

#### 48. *Cæsalpinia* LINN.

##### *Dichotomous Key to the Formosan Species.*

- (1) Leaves glabrous. (2)  
 Leaves tomentose or thinly hairy. .... *C. Bonducella*.  
 (2) Leaflets oblong, rounded and retused at the apex. .... *C. pulcherrima*.  
 Leaflets larger, oblong or ovate, acute at the apex (3)  
 (3) Leaflets ovate, acute at the apex, fruits glabrous. .... *C. Nuga*.  
 Leaflets quadrangulately oblong, acute and aristate at the apex.  
 Fruits prickly. .... *C. Bonduc*.

***Cæsalpinia Bonduc*** ROXB.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 255; TRIMEN Fl. Ceyl. II. p. 98; ITÔ et MATSUM. Tent. Fl. Lutch. p. 437.  
*Guilandia Bonduc* LINN. DC. Prodr. II. p. 480.

HAB. Linkiho.

***Cæsalpinia Bonducella*** FLEMING; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 254; MAXIM. in Mém. Biol. XII. p. 448; FORBES et HEMSL. Ind. Fl. Sin. I. p. 205; MATSUM. et HAYATA Enum. Pl. Formos. p. 114.

HAB. Tainan, Hōzan, Lingaryō.

DISTRIB. All over the tropics, especially in littoral districts.

***Cæsalpinia Nuga*** AIT.; DC. Prodr. II. p. 481; BENTH. Fl. Hongk. p. 97; MAXIM. in Mém. Biol. XII. p. 449; FORBES et HEMSL. Ind. Fl. Sin. I. p. 506; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. Lingaryō, Bōryō, Fūkō, Kelung, Shizangan.

DISTRIB. Southern China, widely diffused in tropical Asia, polynesia and northern Australia.



**Cæsalpinia pulcherrima** SWARTZ; DC. Prodr. II. p. 284; MAXIM. in Mél. Biol. XII. p. 448; FORBES et HEMSL. Ind. Fl. Sin. I. p. 206; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. Hōzan, Ampin.

DISTRIB. Foo-choo and China, generally cultivated in tropical countries.

#### 49. *Gleditschia* LINN.

**Gleditschia formosana** HAYATA Materials for a Flora of Formosa p. 85. Branchlets slender, glaucously rubescent, spinous. Leaves alternate pari-pinnate, narrowed in outline,  $5\frac{1}{2}$  cm. long, 2 cm. broad, 8-juged, upper pinnae larger, obliquely rhomboid, or rhomboid-oblong, 13 mm. long, 6 mm. broad, truncate at the apex, minutely mucronate, cuneately acute at the base, oblique, broader on the upper side, margin crenulate, entire near the base on the upper side, otherwise crenulate, opposite, sessile, or shortly petiolulate, petiolules shortly pilose, rhaches somewhat pilose, sulcate above, lower pinnae smaller, petioles shorter, 3 mm. long, spines branched supra-axillary, 2 cm. long, fulvo-rubescens. Pods complanate, linear-narrowed, 21 cm. long,  $2\frac{1}{2}$  cm. broad, fulvo-rubescens, acute at the apex, styles persistent, base obtuse, glabrous, slightly tortuose. Seeds complanate, 1 cm. long, 8 mm. broad, glabrous, smooth, polished.

HAB. Tenkachiraisha.

The leaves are very much smaller than those of *G. japonica* and as small as those of *G. heterophylla* BENGE. This differs from the latter species by straight, but not curved, pods. There is some doubt about this being a species of *Gleditschia*.

#### 50. *Poinciana* TOURN.

**Poinciana regia** BOJ.; HENRY List. Pl. Formos. p. 38; MATSUM. et HAYATA Enum. Pl. Formos. p. 112.

HAB. The species is not yet represented in our Herbarium.

DISTRIB.



51. *Lysidice* HANCE.

***Lysidice rhodostegia*** HANCE in Journ. Bot. (1967), p. 299, (1873) p. 207, et (1883), p. 298; OLIV. in HOOK. Ic. Pl. XII. p. 80, t. 1192; FORBES et HEMSL. Ind. Fl. Sin. I. p. 213; MATSUM. et HAYATA Enum. Pl. Formos. p. 116.

HAB. Kelung, cultivated.

DISTRIB. Kwangtung.

52. *Cassia* LINN.

*Dichotomous Key to the Formosan Species.*

- (1) Leaflets very much smaller, linear..... *C. mimosoides*.  
     Leaflets oblong, ovate, lanceolate. (2)
- (2) Leaflets obovate rounded, obtuse or minutely mucronate at the apex (3)  
     Leaflets ovately lanceolate or ovate, acute at the apex. . . *C. occidentalis*.
- (3) Pods flat..... *C. glauca*.  
     Pods terete. .... *C. Tora*.

***Cassia glauca*** LAM.; DC. Prodr. II. p. 495; MAXIM. in Mél. Biol. XII. p. 455; FORBES et HEMSL. Ind. Fl. Sin. I. p. 210; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. Tamari, Pinan.

DISTRIB. Cultivated in China; native of tropical Asia and Australia.

***Cassia mimosoides*** LINN.; DC. Prodr. II. p. 503; BENTH. Fl. Hongk. p. 98; FORBES et HEMSL. Ind. Fl. Sin. I. p. 211; MATSUM. et HAYATA Enum. Pl. Formos. p. 125.

HAB. Kinpōri, Shintiku.

DISTRIB. Universally spread in tropical countries, and to Japan.

***Cassia occidentalis*** LINN.; DC. Prodr. II. p. 497; BENTH. Fl. Hongk. p. 98; FORBES et HEMSL. Ind. Fl. Sin. I. p. 211; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. Biōritsu, Tamsui, Shintiku, Regaryō, Tainan.



DISTRIB. Tropical Asia, Africa and America.

**Cassia Tora** LINN.; DC. Prodr. II. p. 493; BENTH. Fl. Hongk. p. 98; FORBES et HEMSL. Ind. Fl. Sin. I. p. 211; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. Pachina, Taihoku.

DISTRIB. Generally spread in the tropics.

*Species imperfectly known to me*

**CASSIA ALATA** LINN.; HOOK. f. Fl. Brit. Ind. I. p. 264; HAYATA Materials for a Flora of Formosa p. 86.

HAB. Akō: Sekisan, G. NAKAHARA, Oct. 1905, (No. 615).

The only specimen we have is of a single leaf, which is nearly 50 cm. long, abruptly pinnate, pinnæ being quadrangulately elliptical with parallel sides, round, minutely mucronate apex and truncate base, 12 cm. long, 5 cm. broad, the superior the larger, oblique at the base, membranaceous and primary veins diverging from the costa at an angle of nearly 80°

**53. Bauhinia** LINN.

**Bauhinia Championi** BENTH. Fl. Hongk. p. 99; HANCE in Journ. Bot. (1883), p. 298; MAXIM. in Mém. Biol. IX. p. 74; FORBES et HEMSL. Ind. Fl. Sin. I. p. 212; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

HAB. The species is not yet represented in our Herbarium.

DISTRIB. China.

**Bauhinia retusa** HAM. ?; ITÔ et MATSUM. l. c. p. 440.

HAB. Piöritsu, Chōran.

DISTRIB.

**54. Erythrophlœum** AFZEL.

**Erythrophlœum Fordii** OLIV. in HOOK. Ic. Pl. XV. p. 7, t. 1409; FORBES et HEMSL. Ind. Fl. Sin. I. p. 214; MATSUM. et HAYATA Enum. Pl. Formos. p. 116.

HAB. Maruyama, Tamsui.

DISTRIB. Kwangtung.



55. *Entada* ADANS.

**Entada scandens** BENTH.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 214; MATSUM. et HAYATA Enum. Pl. Formos. p. 116.

HAB. Keibizan.

DISTRIB. Very widely dispersed in the tropical regions.

53. *Mimosa* LINN.

**Mimosa pudica** LINN.; HENRY List Pl. Formos. p. 39; MATSUM. et HAYATA Enum. Pl. Formos. p. 115.

This is not yet known to me.

DISTRIB.

57. *Leucaena* BENTH.

**Leucaena glauca** BENTH. Fl. Hongk. p. 100; FORBES et HEMSL. Ind. Fl. Sin. I. p. 215; MATSUM. et HAYATA Enum Pl. Formos. p. 116.

HAB. Tamsui, Maruyama.

DISTRIB. Widely spread in the warm regions.

58. *Acacia* WILLD.

*Dichotomous Key to the Formosan Species.*

- (1) Petioles phyllode.....*A. confusa*  
     Petioles not phyllode (2)
- (2) Leaves glabrous.....*A. Farnesiana*.  
     Leaves tomentose beneath .....  $\left\{ \begin{array}{l} A. \textit{Intsia}. \\ A. \textit{pennata}. \end{array} \right.$

**Acacia Farnesiana** WILLD.; DC. Prodr. II. p. 461; BENTH. Fl. Hongk. p. 101; FORBES et HEMSL. Ind. Fl. Sin. I. 215; MATSUM. et HAYATA Enum. Pl. Formos. p. 116.

HAB. Kōshūn, Takow, Shūshūgai, Tainan.

DISTRIB. Widely spread in the tropical and subtropical regions.

**Acacia Intsia** WILLD.; HOOK. f. Fl. Brit. Ind. II. p. 297; HAYATA Materials for a Flora of Formosa p. 86.



HAB. Akō: Pongarisha, Shintiku.

DISTRIB. Tropical Himalayas, India, Ceylon, Philippines.

Very near *A. pennata* WILLD. As the specimens are all sterile, the determination is rather conjectural.

***Acacia pennata*** WILLD.? MATSUM. et HAYATA Enum. Pl. Formos. p. 116.

The species is very imperfect and the determination is very unsatisfactory.

***Acacia confusa*** MERRILL in Philip. Journ. Sci. V.-Bot. p. 27. *Acacia Richii* HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. I. p. 215; MATSUM. in ITÔ et MATSUM. Tent. Fl. Lutch. p. 443; MATSUM. et HAYATA Enum. Pl. Formos. p. 117, (non A. GRAY)

HAB. Taihoku, Kelung, Sharyôtô, Shintiku, Kachirai.

DISTRIB. The Philippines.

### 59. *Albizzia* DURAZZ.

***Albizzia procera*** BENTH.; HOOK. f. Fl. Brit. Ind. II. p. 299; HAYATA Materials for a Flora of Formosa p. 86.

HAB. Piyōritsu: Taiko.

DISTRIB. India, Malay Archipelago, Philippines.

A common *Albizzia* in Formosa. The habit is just like the Japanese *A. Juribrissin*.

### 60. *Pithecolobium* MART.

#### *Dichotomous Key to the Formosan Species.*

- (1) Leaves dichotomously pinnate, leaflets 4 ..... *Pithecolobium dulce*.  
 Leaves pinnate, forked at the midway of the rhaches, leaflets alternately  
 arranged, usually more than 8 on each branch of the rhaches.....  
 ..... *Pithecolobium lucidum*.

***Pithecolobium dulce*** BENTH.; BAKER in HOOK f. Fl. Brit. Ind. II. p. 302; HENRY List Fl. Formos. p. 40; MATSUM. et HAYATA Enum. Pl. Formos. p. 117.



HAB. Exact localities are not yet known.

DISTRIB. India and Hongkong.

**Pithecolobium lucidum** BENTH. Fl. Hongk. p. 102; FORBES et HEMSL. Ind. Fl. Sin. I. p. 217; MATSUM. et HAYATA Enum. Pl. Formos. p. 117.

HAB. Shizangan.

DISTRIB. Hongkong.

## Rosaceæ.

### *Conspectus of the Formosan Genera.*

Carpels free or adnate to the side of the calyx-tube. (1)

Carpels adnate to the tube of the calyx, or, if free, included wholly within it. (4)

- (1) *a*) Flowers regular. Carpel 1, style subterminal or oblique; ovules 2, pendulous. Radicle superior. Trees or shrubs with simple leaves. (Prunææ.) (2)
  - β*) Flowers regular. Calyx ebracteolate. Stamens 10 or more. Carpels many, styles ventral, ovules many, pendulous. Shrubs with implex leaves (Spiræææ).....*Spiræa*. 3
  - γ*) Flowers regular. Calyx ebracteolate. Stamens very numerous. Carpels very many; styles subbasal or ventral; ovules 2, collateral, pendulous. Leaves compound or simple, fruits of many fleshy carpels on carpophore or in receptacle but not included in the calyx-tube. (Rubeæ).....*Rubus*. 4
  - δ*) Flowers regular. Calyx usually bracteolate, stamens numerous, carpels 1 or a few, style short, ovule solitary, ascending. Fruits of many achenes, not included in the calyx-tube. Herbs. (3)
- (2) Calyx 5-lobed, petals 5, large, glabrous, carpel solitary, style nearly terminal .....*Prunus*. 1
 

Calyx 5-lobed, petals 5, drupe inverted, style subbasilar, branches turning to spines .....*Prinsepia*. 2
- (3) Calyx bracteolate. Stamens many, styles not elongating, ripe carpels



- seated on a fleshy receptacle ..... *Fragaria*. 5
- Calyx bracteolate. Stamens many, styles not elongating, ripe carpels seated on an elevated dry receptacle (3\*)
- (3\*) Stamens and carpels many ..... *Potentilla*. 6
- Stamens and carpels 5 or rarely 10 ..... *Sibbaldia*. 7
- (4) *a*) Flowers regular, calyx-tube often urceolate, stamens 1 or more. Carpels 1-3, styles terminal; ovule 1. Achenes sunk in the calyx-tube. Herb. (Poteriæ) ..... *Agrimonia*. 8
- β*) Flowers regular. Calyx-tube urceolate. Petals 5. Stamens very numerous. Carpels many, free; ovule 1, pendulous. Achenes included in the fleshy calyx-tube. Shrubs, leaves compound (Roseæ). *Rosa*. 9
- γ*) Flowers regular. Calyx-tube becoming fleshy after flowering and enclosing the carpels. Stamens numerous. Ovules 2 or more, ascending. Fruit a pome, berry or a drupe, with 2-5 bony or coriaceous 1-2-seeded stones.—Shrubs or trees. (5)
- (5) Carpels free on the ventral side ..... *Cotoniaster*. 11
- Carpels more or less entirely connate or single. (6)
- (6) Carpels entirely covered by the receptacle; the cells, therefore, inside of the fruit. (7)
- Carpels upwards free from receptacles; the cells, therefore, reaching the hole of the fruit. (8)
- (7) Receptacles (axis) turbinate or urceolate ..... *Pyrus*. 10
- Receptacles (axis) obconical or funnel-shaped. .... *Rhaphiolepis*. 14
- (8) Endocarp very thin, membranaceous ..... *Eriobotrya*. 13
- Endocarp coriaceous ..... *Photinia*. 12

### 1. *Prunus* LINN.

#### *Dichotomous Key to the Formosan Species.*

- (1) Flowers in a long raceme, leaves punctate acuminate caudate .....  
 ..... *Prunus punctata*.
- Flowers axillary, clustered or very shortly racemose, or solitary, leaves not punctate (2)



- (2) Flowers large, more than 2 cm. in length, leaves oblong or ovate, cuspidately acuminate, serrate, slightly cordate at the base, stipules fimbriately lacerate, segments recurved ..... *Prunus campanulata*  
 Flowers smaller, less than 1 cm. in length, (if more than 1 cm. the leaves lanceolately oblong) (3)
- (3) Flowers white, nearly sessile or very shortly pedicelled, nearly solitary, leaves ovate, acuminate at the apex, stipules linear ..... *P. Mume*.  
 Flowers coloured or sometimes white, more or less pedicelled, 2-3-clustered, leaves usually lanceolate, sometimes ovate, but not acuminate at the apex. (4)
- (4) Leaves lanceolate or elongately oblong, much larger (5)  
 Leaves nearly rounded or ovate, acute towards the apex, but quite obtuse at the extremity, branches very slender, leaves much smaller ..... *P. pogonostyla*
- (5) Leaves elliptically lanceolate, flowers nearly solitary,  $1\frac{1}{2}$  cm. in length, (obtuse or nearly rounded at the base). ..... *P. Persica*.  
 Leaves lanceolate or ovate, acuminate at both ends. (6)
- (6) Flowers long pedicelled more or less racemously arranged, leaves, ovate ..... *P. taiwaniana*.  
 Flowers clustered, shortly pedicelled, leaves lanceolate... *P. Karakamii*.

**Prunus campanulata** MAXIM. in Mél. Biol. XI. p. 698; FORBES et HEMSL. Ind. Fl. Sin. I. p. 218; ITÔ et MATSUM. Tent. Fl. Lutch. p. 446; MATSUM. et HAYATA Enum. Pl. Formos. p. 117.

HAB. Tikushiko.

DISTRIB. Loo-choo (cult.) and China.

**Prunus communis** HUDS.; MAXIM. in Mél. Biol. XI. p. 677; FORBES et HEMSL. Ind. Fl. Sin. I. p. 218; DIELS Fl. Cent. Chin. p. 407; PALIBIN Conspect. Fl. Koreae I. p. 86; MATSUM. et HAYATA Enum. Pl. Formos. p. 117.

*Prunus domestica* LINN. Sp. Pl. ed-2, p. 680; LOUR. Fl. Cochinch. ed- WILLD. p. 338.



*Prunus insititia* LINN. Sp. Pl. ed-2, p. 680.

HAB. Shintiku.

DISTRIB. Europe through Asia.

The occurrence of *P. communis* in the island is rather doubtful.

**Prunus Kawakamii** HAYATA Fl. Mont. Formos. p. 77; Shrub, young virgate branches cinereo-pubescent, glabrous. Leaves hysteranthous, young ones petiolate, petioles 4 mm. long, semiterete glabrous, blades acute at the base, ovate, oblong, acute at the apex, margin glanduloso-serrulate, glabrous on both surfaces, stipules lanceolate, glanduloso-ciliolate. Flowers 5-6 clustered, pedicellate, pedicels 7 mm. long, terete, glabrous. Calyx hypogynous, persistent; tube shortly campanulate, glabrous, inside with disc, lobes 5, ovate, 3 mm. long, obtuse, glanduloso-ciliate, patent. Petals affixed on the throat of the calyx, cuneately obovate, with short claws at the base, rounded at the apex, quite entire, radiately venose, glabrous, patent 6½ mm. long, 4 mm. broad. Stamens affixed on the throat of the calyx, much exserted, a little longer than petals. Ovary superior, ovoid with style 6 mm. long, stigma capitately peltate.

HAB. Toroku; Kanōsha.

DISTRIB. An allied species, *P. japonica* THUNB. occurs in Japan and China.

Closely resembles *P. japonica* THUNB; differs from it in having peltately capitate stigmas, longer stamens and smaller petals.

**Prunus Mume** SIEB. et ZUCC. Fl. Jap. I. p. 29, t. 11, et Fl. Jap. Fam. Nat. I. p. 122; MIQ. Prol. Fl. Jap. p. 22; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 117; MAXIM. in Mél. Biol. XI. p. 671; ITÔ et MATSUM. Tent. Fl. Lutch. p. 445; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 118.

HAB. Suichōryū, Niki, Shintiku.

DISTRIB. Japan.

**Prunus Persica** SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 122; MAXIM. in Mél. Biol. XI. p. 666; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 313; FORBES et HEMSL. Ind. Fl. Sin. I. p. 220; HENRY List Pl. Formos. p. 40;



DIELS Fl. Cent. Chin. p. 407; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA Enum. Pl. Formos. p. 118.

*Amygdalus Persica* LINN. Sp. Pl. ed-2, p. 676; THUNB. Fl. Jap. p. 199; BOXB. Fl. Ind. II. p. 500; MIQ. Prol. Fl. Jap. p. 25; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 119.

*Prunus Davidiana* FRANCHET Pl. David. p. 103.

*Persica vulgaris* MILL.; DC. Prodr. II. p. 531.

HAB. Shintiku, Taihoku, Tōseikaku, Kōtōshō, Pankinsing.

DISTRIB. Cultivated in Japan, Corea, China and India.

***Prunus pogonostyla*** MAXIM. "in Bull. Soc. Nat. Mosc. (1897), p. 11" et Mém. Biol. XI. p. 682; FORBES et HEMSL. Ind. Fl. Sin. I. p. 221; HENRY List Pl. Formos. p. 40; MATSUM. et HAYATA Materials for a Flora of Formos. p. 87.

*Prunus formosana* MATSUM. in MATSUM. et HAYATA Enum. Pl. Formos. p. 118, t. 11.

HAB. Tamsui, Shintiku, Taichū, Tōseikaku, Shinkōshō.

DISTRIB. Fokien.

I have compared the present plant with the type of *Prunus pogonostyla* MAXIM. at Kew, and found that they are quite identical.

***Prunus punctata*** HOOK. f.; HAYATA Materials for a Flora of Formosa p. 87.

*Prunus xerocarpa* HEMSLEY in Ann. Bot. IX. p. 152; HENRY List Pl. Formos. p. 40; MATSUM. et HAYATA Enum. Pl. Formos. p. 119.

HAB. Tikushiko.

DISTRIB. Eastern India, China, Kwangtung Hongkong.

***Prunus taiwaniana*** HAYATA (Pl. XXI.) Materials for a Flora of Formosa p. 87. Branches virgate, bark dark-ashy, glabrous, lenticellate. Leaves hysteranthous membranaceous, slightly pubescent or glabrous, oblongly obovate, 6 cm. long, 23 mm. broad, cuspidately acuminate at the apex, cuneately acute at the base, serrulate on the margin, glabrous, or slightly pubescent above, but densely pubescent beneath on the costa and veins, petioles 6 mm. long, pubescent, stipules linear-lanceolate, minute. Flowers 5-6-clustered, perulate, perules scaly, rounded, glabrous, pedicels 1 cm.



long, pubescent. Calyx-tube pubescent, urceolately tubuliformed, 4 mm. long, limb 5-lobed, lobes patent, narrowed, 3 mm. long, acuminate, glanduloso-serrulate on the margin. Petals 5, oblong, 8 mm. long, 4 mm. broad, 2-lobed at the apex, (lobes  $1\frac{1}{2}$  mm. long, obtuse) or emarginate at the apex. Ovary ovate, 1 mm. long, glabrous, style  $7\frac{1}{2}$  mm. long, sparingly barbellate downwards, but glabrous towards the apex, stigma capitellate. Fruits ellipsoid 6 mm. long, 5 mm. broad, apiculate, with calyx-cupule at the base, long pedunculate, peduncles 2 cm. long.

HAB. Nanto: Musha.

Somewhat near *Prunus pendula* MAXIM., but distinguishable by the smaller flowers with narrower and more deeply emarginate petals.

## 2. *Prinsepia* ROYLE.

***Prinsepia utilis*** ROYLE HAYATA Materials for a Flora of Formosa p. 105. Branches greenish, glabrous, spinous, spines alternate,  $1\frac{1}{2}$  cm. long, axillary, solitary. Leaves greenish, alternate, petiolate, oblong, lanceolate,  $4\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. broad, subentire or obscurely subcrenate, acute shortly aristate at the apex and shortly attenuate at the base, petioles 7 mm. long. Flowers shortly racemose or 3-5-clustered, racemes axillary, 2-3 cm. long, few-flowered, pedicels 1 cm.-2 cm. long. Flowers  $1\frac{1}{2}$  cm. in diameter. Sepals 5, very unequal 2-outer ones smallest, rounded, 2 mm. long, incrassate, 3-inner ones larger, rounded 4 mm. long, margin scarious. Petals 5, ovately rounded, 6 mm. long, 5 mm. broad, rounded at the apex, shortly obtuse at the base. Stamens  $\infty$  inserted on the margin of the disc, filaments 2 mm. long, anthers 2-celled, connectives broader, emarginate at the apex. Ovary globose, 1 mm. long, style 2-3 mm. long, lateral, spirally recurved or ascendent, stigma capitato-peltate. Fruits not yet known.

Very interesting genus closely allied to *Celastrinææ*.

HAB. Ganzan, Mt. Morrison, the central mountain ranges.

DISTRIB. Temperate Himalayas.



3. *Spiræa* LINN.*Dichotomous Key to the Formosan Species.*

- (1) Flowers in terminal cymes (2)  
 Flowers in axillary umbels. .... *S. prunifolia*.  
 (2) Plants more than 30 cm. high. .... *S. formosana*.  
 Plants small, less than 20 cm. high, leaves very much smaller. ....  
 .... *S. morrisonicola*.

***Spiræa formosana* HAYATA** (Pl. XXII.) Materials for a Flora of Formosa p. 88. Branches straight, fulvescent, densely pubescent. Leaves oblong, or oblong-ovate, 4 cm. long,  $2\frac{1}{2}$  cm. broad, acute at the apex, roundly acute at the base, duplicately serrulate on the margin, (serrulas callose at the apex), costas and veins impresse above elevated below, primary veins 5 on both sides, nearly straight, ascendent, reaching the apex of the serrulas, nearly glabrous on both sides, pallid-glaucous beneath, petioles 2 mm. long. Terminal cymes 5 cm. long, 8 cm. broad, branches and pedicels pubescent, bracteoles subulate. Calyx broadly campanulate,  $1\frac{1}{2}$  mm. long, 3 mm. broad, 5-lobate, lobes patent, triangular, pubescent outside, glabrous inside. Petals 5, broadly rounded, rounded or slightly emarginate at the apex, obtuse at the base. Stamens 20, exserted, 4 mm. long, inserted on the throat of the calyx. Glands of disc nearly 10, inserted on the throat, broadly narrowed,  $\frac{1}{2}$  mm. long. Carpels 5, subfusiformed,  $2\frac{1}{2}$  mm. long, hirsute on the innerside, styles persistent, 1 mm. long.

HAB. Randaisan.

Near *Spiræa japonica* LINN., but differs from it in having duplicately serrated leaves and less hairy smaller calyx; also near *Spiræa bella* from which this differs in having ovate acuminate or acute leaves.

***Spiræa formosana* HAYATA var. *brevistyla* HAYATA** Materials for a Flora of Formosa p. 89. Calyx-lobes nearly obsolete, or very much obtuse. Carpels ovoid when ripened, 2 mm. long, shortly rostrate at the apex, or not rostrate, glabrous, other things the same as the type.

HAB. Mt. Morrison.



This variety differs from the type in having much shorter carpels, nearly obsolete styles, and very much shorter calyx-lobes.

**Spiræa morrisonicola** HAYATA (Pl. XXIII.) Materials for a Flora of Formosa p. 89. Shrub dwarfish glabrous. Leaves alternate, subsessile, ovate, obtuse at the apex, acute at the base, or cuneate,  $1\frac{1}{2}$  cm. long, denticulate from the middle upwards, entire towards the base, veins impressed above, prominent beneath. Fruits on terminal racemosely cymes. Carpels 2 mm. long, shortly beaked.

HAB. in Mt. Morrison.

The present plant is distinguished from other species of the genus by its small and glabrous form.

**Spiræa prunifolia** SIEB. et ZUCC. fl. simplicis, MATSUM. et HAYATA Enum. Pl. Formos. p. 119, t. 12, et HAYATA Fl. Mont. Formos. p. 78. Shrub. Leaves alternate, petiolate, elliptical, 13–18 mm. long, 9–12 mm. broad, entire downwards, serrulate upwards, (serrulas acute), subglabrous or sparingly pubescent above, sericeo-tomentose beneath, petioles 2–3 mm. long. Flowers axillary, 5–6-clustered, pedicels 10–15 mm. long, pubescent. Flowers when opened 8 mm. in diameter. Calyx persistent; tube urceolately campanulate 5-lobed at the middle, lobes ovate, acute. Petals 5, inserted on the mouth of the calyx, orbicular, shortly clawed, slightly emarginate at the apex. Stamens  $\infty$ , nearly 20, 2-seriately inserted at the throat of the calyx, filaments glabrous, base 2-glanduliferous, anthers 2-celled, introrse. Disc carnosose, tomentose, adnate to the calyx-tube. Carpels 5, inserted at the base of the calyx, shortly stipitate, free, styles subterminal subgeniculate, stigmas capitate. Ovary 1-celled, ovules  $\infty$ . Carpels when matured coriaceous dehiscent by the ventral suture. Seeds pendulous, linear.

HAB. Mt. Morrison. Nantō: Hinokiyama. Toroku, Kureikyaku, Rinkihō.

DISTRIB. China throughout, Japan and Korea.

The original description in "SIEB. et ZUCC. Fl. Jap. p. 131" is written from a plant with double flowers which is very common in Japan proper. No specimen with simple flowers has ever been represented here at Tōkyō.







- Calyx pubescent on the back. (8)
- (8) Calyx pubescent and beset with a small prickles. .... *R. taiwensis*.  
 Calyx pubescent but not prickly. .... *R. shinkoensis*.
- (9) Leaves roundly coriolate, slightly 3-lobed, rounded in every respect...  
 ..... *R. pectinellus*.  
 Leaves broadly ovate, irregularly lobate, acuminate at the base. ....  
 ..... *R. Lambertianus*.
- (10) Leaves not lobed, irregularly dentate, glabrous above, white cottony,  
 below, oblong, ovate, acuminate at the apex, truncate or rounded  
 at the base. .... *R. Swinhoei*.  
 Leaves more or less lobed. (11)
- (11) Leaves beneath covered with velvety wools, stipules lacerate. Calyx  
 silky tomentose. .... *R. moluccanus*, *R. formosensis*?  
 Leaves beneath covered with cottony wools. (12)
- (12) Creeping, prostrate, with rounded 5-lobed leaves. .... *R. pentalobus*.  
 Scandent, but not creeping, leaves more or less elongate (13)
- (13) Leaves more or less rounded, crenulate with thick cottony wools. ....  
 ..... *R. Rolfei* VID. var. *lanatus*.  
 Leaves more or less elongate, acutely serrate with thinly cottony wools. (14)
- (14) Flowers smaller, calyx-lobes 5 mm. long, entire. .... *R. nantaisensis*.  
 Flowers larger, calyx-lobes lacerato-serrate. .... *R. randaiensis*.
- (15) Leaflets 3. (16)  
 Leaflets 5 or more than 5. (18)
- (16) Leaves beneath whitish, covered with thinly cottony wools. ... *R. parvifolius*.  
 Leaves beneath slightly velvety or nearly glabrous, without whitish  
 cotton (17)
- (17) Leaves nearly glabrous, beset with minute prickles underneath along  
 the costa. .... *R. fasciculatus*.  
 Leaves velvety on both surfaces. .... *R. Taiwanianus*.
- (18) Plants very small less than 15 cm. high, leaves small 8 cm. long. (19)  
 Plants more than 20 cm. long (20)
- (19) Leaves glabrous. .... *R. elegans*.  
 Leaves hirsute. .... *R. hirsutus*.



- (20) Leaves densely, velvety, or glabrate ..... *R. tagallus*.  
 Leaves glabrous. (21)  
 (21) Leaflets much narrower, thinner, terminal leaflet 7 cm. long,  $2\frac{1}{2}$  cm.  
 broad. .... *R. rosifolius*.  
 Leaflets much broader, much thicker, the terminal leaflet 8 cm. long.  
 4 cm. wide. .... *R. fraxinifolius*.

**Rubus conduplicatus** DUTHIE (Pl. XXIV.) HAYATA Materials for a Flora of Formosa p. 89, et Suppl. p. 449. Branches glabrous, terete, more or less striate, with a very few prickles, reddish purple or dark brown, sometimes covered with powders, prickles short,  $1\frac{1}{2}$  mm. long, transverse, straight, laterally compressed and broadened at the base. Leaves lobed or 3-lobed, oblong when not lobed,  $5\frac{1}{2}$  cm. long, 3 cm. broad, or broadly triangular when lobed, cuspidate at the apex, profoundly cordate and 3-nerved at the base, central nerve 9 cm. long, basal nerves 6 cm. long, lobes acuminate or shortly cuspidate, divaricate from the central one at an angle of  $60^\circ$ , glabrous on both surfaces, more or less glaucous beneath, veins impressed above, prominent beneath, sparingly prickly on the midrib, petioles  $1\frac{1}{2}$ -3 cm. long sparingly prickly, stipules linear, acuminate 1 cm. long. Flowers in cymes, cymes axillary, peduncled, 6 cm. long including peduncles, 5 cm. broad, 5-10-flowered, bracts very like stipules, but smaller, pedicels  $\frac{1}{2}$ -1 cm. long. Calyx dark-purple, glabrous outside, pubescent inside, lobes ovately triangular, elongate, 6 mm. long, 3 mm. broad at the base, aristately acuminate, margin whitish, cupule glabrous, nearly flattened, 1 cm. in diameter. Petals obovate 5 mm. long, 3 mm. broad, rounded at the apex, obtuse at the base,  $\frac{1}{2}$  mm. broad at the base. Stamens on the margin of the cupule, 2-seriate, filaments dilate, complanate, 3 mm. long,  $\frac{1}{2}$  mm. broad, apex abruptly narrowed filiformed, anthers orbicular, emarginate on both ends. Carpophore small, semi-globose, slightly pubescent or nearly glabrous. Carpels obliquely obovate narrowed at the base, slightly hairy towards the apex; styles persistent hairy near the base; stigma terminal glabrous inside, slightly pubescent towards the base outside.

HAB. Shintiku : Taihei ; Akō : Taijorenge ; Randaisan.



**Rubus corchorifolius** LINN. f.; DC. Prodr. II. p. 567; HANCE in Journ. Bot. (1878) p. 10, et (1884) p. 42; MAXIM. in Mél. Biol. VIII. p. 380; FRANCHET Pl. David. p. 109; FORBES et HEMSL. Ind. Fl. Sin. I. p. 230; DIELS Fl. Cent. Chin. p. 391.

*Rubus villosus* THUNB. Fl. Jap. p. 218.

*Rubus Oliveri* MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 35.

var. **glaber** MATSUM. in Tōkyō Bot. Mag. XV. p. 157; MATSUM. et HAYATA Enum. Fl. Formos. p. 121; HAYATA Fl. Mont. Formos. p. 79.

HAB. Horisha, Suisha, Taichū : Kashigatani.

DISTRIB. Type : Japan and China.

**Rubus elegans** HAYATA in Tōkyō Bot. Mag. XX. p. 74, et Fl. Mont. Formosa p. 79, t. 4. Stem very short, nearly shrubby at the base, simple, sub-erect 1- rarely 2-flowered. Leaves all radical, oblong or oblong-lanceolate, with petioles 6-7 cm. long, 2 cm. broad, (petioles 1.5 cm. long), pinnate 13-15-foliolate, leaflets obovate, 1-1.5 cm. long,  $\frac{1}{2}$  cm. broad, terminal one sometimes 3-lobate, serrate, serras acute, aculeate on the petioles and costas, stipules adnate, subulate, linear, nearly 1 cm. long. Flowers larger, pedunculate, peduncles 5-6 cm. long, 1-bracteate, bracts minute, acute, 2 mm. long. Flowers patent, 22 mm. in diameter. Calyx-lobes ovately triangular, aculeate acuminate, 8 mm. long, outside pubescent. Petals broadly ovate, 9 mm. long, obtuse at the apex, base shortly clawed. Stamens numerous, filaments flattened glabrous. Syncarp ovately globose, 1 cm. long or longer. Receptacle ovately globose.

HAB. Ganzan.

**Rubus fasciculatus** DUTHIE (Pl. XXV.) in Ann. Bot. Gard. Calc. IX. p. 39; HAYATA Materials for a Flora of Formosa p. 90, et Suppl. 449. Branchlets terete, more or less sulcate, covered by soft long bristles and also with soft pubescent coat, (bristles 3 mm. long, very slender transversely spreading), and remotely beset with prickles, prickles recurved downwards, 2-3 mm. long, laterally compressed, broadened at the base. Leaves trifoliolate, ovate in outline, 15 cm. long including petioles, 8-9 cm. broad, petioles and petiolules as downy prickly and bristly as the



branchlets, common petioles 3 cm. long, as long as the terminal petiolules, terminal leaflet nearly rounded, 9 cm. long, 7 cm. broad, shortly cuspidate at the apex, quite rounded at the base, margin duplicately serrulate, teeth shortly cuspidate at the apex, more or less recurved; leaflets of lateral pair smaller, rounded, 4 cm. long as broad, very shortly stalked or nearly sessile; veins impressed above, prominent beneath, primary lateral veins 7-8, rather divaricate, secondary ones obliquely transverse; blades thinly coriaceous, glabrous on both surfaces except on the midribs and veins which are more or less downy and prickly, reddish brown above, pale brown beneath in a dried specimen; stipules subulate or linear, 9 mm. long. Flowers axillary or terminal, solitary or clustered; bracts many at the base of pedicels; bracts linear-lanceolate, acuminate, 7 mm. long,  $1\frac{1}{2}$  mm. broad, pubescent; pedicels 1 cm. long, downy and bristly; fructiferous calyx half-closed pubescent on both sides, cupule sericeously downy, 8 mm. in diameter; calyx-lobes 5, ovate, 7 mm. long,  $4\frac{1}{2}$  mm. broad at the base, mucronate at the apex, sparingly bristly at the base outside, stamens on the margin of the cupule, 1-seriate, filaments dilate, complanate, narrowed at the apex. Carpophore globose more or less elongate, elevated, 5 mm. long, pubescent. Carpels in a dried specimen reticulately rugulose, styles 3 mm. long, persistent base hairy; stigma terminal.

HAB. Taitō: Koshiron.

When I was at Kew, I compared the plant with the type of DUTHIE's plant and found that they are quite identical, although there are some small differences between them. The calyx of our plant is half-closed after flowering, but in the Indian plant, as we see in the figures cited above, it is nearly reflexed. The prickles in the latter are much fewer and the leaves are larger.

***Rubus formosensis*** O. KUNTZE; FORBES et HEMSL. Ind. Fl. Sin. I. p. 230; HENRY List Pl. Formos. p. 40; MATSUM. in Tōkyō Bot. Mag. XV. p. 156; MATSUM. et HAYATA Enum. Pl. Formos. p. 121.

*Rubus rugosus* MAXIM. in Mém. Biol. VIII. p. 377.

HAB. Taitōchō, Mmrimuribussha, Hinan, Reisuikutsu, Kelung.



DISTRIB. An endemic plant.

**Rubus fraxinifolius** POIR. "Encyc. VI. p. 242"; MIQ. Fl. Ind. Bat. I. p. 376; HOOK. f. Fl. Brit. Ind. II. p. 342; MAXIM. in Mém. Biol. VIII. p. 391; MATSUM. in Tōkyō Bot. Mag. XVI. p. 4; MATSUM. et HAYATA Enum. Pl. Formos. p. 121; HAYATA Fl. Mont. Formos. p. 80.

HAB. Goshōrin, Kōtōshō, Kusshaku, Tōhoshu.

DISTRIB. Java and India.

**Rubus hirsutus** HAYATA = *Rubus rosafolius* SM. var. *hirsuta* HAYATA Fl. Mont. Formosa p. 81. Branchlets aculeate, pilose, hairs strong, prickles smaller, falcate, acuminate. Leaves ovately acuminate, hirsute, with petioles 5-6 cm. long, 5-foliate, lateral leaflets subsessile or shortly petiolulate, oblong, elliptical, 1 cm. long or longer, dentate, teeth acute, terminal leaflet ovately lanceolate, duplicato-dentate, teeth acuminate, petiolules 5 mm. long, aculeate on petioles and costas; stipules subulate, ciliate. Flowers terminal or lateral, often solitary, pedunculate. Calyx-lobes ovately triangular, long caudate, tails linear, 6 mm. long, outside pubescent. Petals ovate, 11 mm. long, 8 mm. broad, rounded at the apex, acute at the base. Stamens numerous, filaments flattened. Fruits yet unknown.

HAB. Mt. Morrison.

**Rubus Kawakamii** HAYATA (Pl. XXVI), Materials for a Flora of Formosa p. 91. Branches fusco-pubescent or fuscent, slender, at first soft tomentose, at last glabrous, somewhat straight, shortly aculeate, prickles 1 mm. long, dilate at the base. Leaves long petiolate, oblong, oblong-ovate or elliptically ovate, 12 cm. long, 5 cm. broad, acuminate at the apex, roundly ovate at the base, margin obscurely remotely serrulate duplicately serrulate, very variable, obscurely 3-nerved at the base, costas and veins slightly impressed above, elevate beneath, primary veins including basal nerves 7-8 on each side, nearly parallel, divaricate from the costa at an angle of 30°, glabrous above, tomentose beneath, glabrous at last, minutely remotely aculeate on the costa beneath, petioles slender, 2½ cm. long, canaliculate above, aculeate beneath, stipules deciduous, not yet seen. Cymes umbellate, a few-flowered, flowers 5-6, long pedicellate, pedicels 2 cm. long, densely



pubescent, bracteate at the base, bracts ovate, 5 mm. long. Calyx campanulate, densely villosely pubescent outside, aculeate, (bristles  $\frac{1}{4}$  mm. long, acute or dilately truncate at the apex), shortly villosely pubescent inside, cupules 9 mm. in diameter, lobes ovate, 9 mm. long, suddenly acuminate at the apex, margin laciniate, but entire from the middle to the base. Petals 5, obovate, shortly villose on both surfaces,  $\frac{1}{3}$  as long as the calyx-lobes. Carpophore densely barbate. Carpels præmature oblong, 1 mm. long, recurvate, styles 5 mm. long, hirsute at the base. Drupels when mature obovate 3 mm. long,  $2\frac{1}{2}$  mm. broad.

Near *R. malifolius* FOCKE; but differs from it in having more acute or even acuminate and usually tri-nerved leaves and cymose or even umbellate flowers. In *R. malifolius*, the leaves are pinninerved and the flowers are in racemes. This is also near *R. Swinhœi* HANCE, which differs from this plant in having quite glabrous leaves, and not prickly pedicels and calyx; also distinguishable from *R. sepalanthus* FOCKE by trinerved leaves and umbellately contracted racemes.

HAB. Randaizan.

**Rubus Lambertianus** SER. in DC. Prodr. II. p. 567; S. MOORE, in Journ. Bot. (1875), p. 226; MAXIM. in Mém. Biol. VIII. p. 381; FORBES et HEMSL. Ind. Fl. Sin. I. p. 233; DIELS Fl. Cent. Chin. p. 392 (var.); MATSUM. in Tōkyō Bot. Mag. XV. p. 156; MATSUM. et HAYATA Enum. Pl. Formos. 121.

*Rubus ochlanthus* HANCE in Journ. Bot. (1882) p. 260, et (1884) p. 42.

HAB. Kōtōshō.

DISTRIB. China: Kiangsi, Kwangtung.

**Rubus moluccanus** LINN.; DC. Prodr. II. p. 566; ROXB. Fl. Ind. II. p. 518; MIQ. Fl. Ind. Bat. I. pt.-I. p. 382; HOOK. f. Fl. Brit. Ind. II. p. 330; MATSUM. et HAYATA Enum. Pl. Formos. p. 122.

*Rubus rugosus* SMITH; WIGHT Ic. Pl. Ind. Or. t. 225.

*Rubus reflexus* KER.; BENTH. Fl. Hongk. p. 104 (fide HOOK. f.).

*Rubus Hamiltonianus* SER.; in DC. Prodr. II. p. 566 (fide HOOK. f.).

HAB. Tōseikaku, Koroton.



DISTRIB. Malay archip. and peninsula.

**Rubus Morii** HAYATA Materials for a Flora of Formosa p. 90. Branches fusco-purpurascens, terete, pubescent, minutely aculeate, prickles 1 mm. long. Leaves cordately ovate, 6 cm. long,  $4\frac{1}{2}$  cm. broad, cuspidately acuminate at the apex, (cusps  $1\frac{1}{2}$  cm. long), rounded at the base, lobulate on the margin, lobules serrate, (serrae cuspidate), 3-nerved or pinnately nerved, scabrous above, minutely sparingly lepidote, more pallid beneath, petioles 1 cm. long, smooth, stipules oblique elongately oblong, 12 mm. long, 5 mm. broad, acute at the apex, laciniately dentate on the margin, scabrously lepidote. Flowers racemose, racemes terminal, 10 cm. long, lepidote, bracts acuminate ovate, laciniate. Calyx densely lepidote outside, (reflexed when fructiferous), cupule strongly reflexed,  $3\frac{1}{2}$  mm. in radius, profoundly reticulately furrowed inside, lobes acuminate triangular, 9 mm. long,  $4\frac{1}{2}$  mm. broad at the base, lepidote outside, slightly pubescent inside. Petals persistent, obovate, denticulate, entire downward, 5 mm. long,  $2\frac{1}{2}$  mm. broad, cuneately narrowed at the base. Stamens 1-seriate, filaments complanate  $2\frac{1}{2}$  mm. long, reddish glanduliferous at the base. Carpophore globose,  $1\frac{1}{2}$  mm. in diameter, barbate, stipitate, stalks  $1\frac{1}{2}$  mm. long, barbate. Drupels laterally compressed,  $1\frac{1}{2}$  mm. long, 1 mm. broad, reticulately rugulose.

HAB. Taitō: Chakankei.

Remarkable for the cupules which are very much reflexed and deeply reticulately furrowed.

**Rubus nantōensis** HAYATA (Pl. XXVII.) Materials for a Flora of Formosa p. 92. Branches terete, fusco-fulvescent, flexuose, softly tomentose upwards, at last subglabrous, minutely prickly remotely leafy. Leaves long petiolate, 3-5 lobate, broadly ovate in outline, 8 cm. long, 6 cm. broad, acute at the apex roundly cordate or truncately rounded at the base, margin irregularly serrulate, terminal lobe half as long as the leaf, acute at the apex, slightly contracted at the base, subovate, 5 cm. long, 3 cm. broad, sinus between lobes rounded, lateral lobes smaller, basal lobes minute, 5-nerved at the base, reticulately and papilloso rugose above, costae veins and veinlets slightly impressed above, at last subglabrate, albo-



rubescent beneath, costa, veins and veinlets prominently and reticulately elevated beneath, petioles  $3\frac{1}{2}$  cm. long, prickles minute, remotely dispersed or smooth, stipules narrowed 12 mm. long, obscurely denticulate or entire. Flowers racemose, racemes axillary,  $1\frac{1}{2}$  cm. long, softly tomentose, pedicels 4 mm. long, bracts broadest, 3 mm. long, 4 mm. broad, laciniate, tomentose outside, glabrous inside, 2-bracteolate, bracteoles 2 mm. long, digitately laciniate. Calyx campanulate, 5-lobed, densely pubescent outside, slightly pubescent inside, lobes broadly narrowed, 5 mm. long, 3 mm. broad, abruptly acuminate at the apex. Carpophore semiglobose, barbate, carpels with styles 5 mm. long, stigma capitate.

HAB. Nantō: Bikei.

Near *R. rugosus* SM; but differs from it by the smaller flowers and more acutely lobed leaves.

**Rubus parvifolius** LINN. Sp. Pl. ed-2, p. 707; DC. Prodr. II. p. 564; LOUR. Fl. Cochinch. ed-WILLD. p. 393; BENTH. Fl. Hongk. p. 105, et Fl. Austral. II. p. 430; MAXIM. Mém. Biol. VIII. p. 392; MIQ. Prol. Fl. Jap. p. 222; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 127; FORBES et HEMSL. Ind. Fl. Sin. I. p. 235; HENRY List Pl. Formos. p. 40; ITÔ et MATSUM. Tent. Fl. Lutch. p. 451; PALIBIN Conspect. Fl. Koreæ I. p. 79; MATSUM. et HAYATA Enum. Pl. Formos. p.

*Rubus triphyllus* THUNB. Fl. Jap. p. 215; HANCE in Journ. Bot. (1878) p. 105, et (1884) p. 42.

HAB. Tamsui, Shizangan, Taiton.

DISTRIB. Japan, Hongkong, China, Corea, east Australia.

**Rubus pectinellus** MAXIM. in Mém. Biol. VIII. p. 374; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 122; HAYATA in Tōkyō Bot. Mag. XX. p. 55; HAYATA Fl. Mont. Formos. p.

HAB. Tōzan.

DISTRIB. Southern parts of Japan and also recently found in Luson.

**Rubus pentalobus** HAYATA Fl. Mont. Formos. p. 80. Shrub, scandent entirely villosely tomentose. Leaves long petiolate, tomentosely villose, petioles 5-10 cm. long, blades cordately rounded in outline, 5-7 cm. in



diameter, slightly 5-lobed, rounded at the apex, base cordate, lobes rounded, irregularly denticulate, palmately 5-7 nerved, somewhat pilose above, villosely tomentose and pallid beneath, veins prominent beneath, stipules laciniate, 13 mm. long. Flowers axillary, solitary or in pairs, pedunculate, peduncles 1 cm. long, 2-3 bracteolate, bracteoles minute laciniate. Calyx-lobes ovate, laciniate at the apex, tomentose, 1 cm. long. Stones drupaceous.

HAB. Mt. Morrison, Biōritsu, Hakkeirin. The present rubus is near *R. pectinellus* MAXIM.; but differs from it in having unarmed sepals and five lobed leaves. The leaves are much more tomentose, and somewhat tuberculate on the upper surface.

**Rubus pungens** CAMB. var. **Oldhami** MAX. (det. KOIZUMI).

HAB. Central Mountain Ranges, by U. MORI, 1910.

I am merely following Mr. G. KOIZUMI in referring this plant to the above species. It is, in my opinion, a little different from the Japanese species.

DISTRIB. Japan.

**Rubus randaiensis** HAYATA Materials for a Flora of Formosa p. 93.

Branches smooth, softly tomentose, terete, fusco-fulvescent. Leaves long petiolate, 5-lobate, subcordate in outline, obtusely acute at the apex, cordate at the base, 10 cm. long, 8 cm. broad, margin lobulately serrulate, lobules serrate, terminal lobe ovate,  $\frac{1}{2}$  as long as the leaf, 6 cm. long,  $3\frac{1}{2}$  cm. broad, sinus between lobes obtuse, lateral lobes smaller, rounded at the base, 5-nerved, rugose and pubescent above, densely albo-floccoso-tomentose beneath, veins and veinlets reticulately elevated, petioles 4 cm. long, villosely tomentose, stipules larger oblong-ovate, 18 mm. long, 5 mm. broad, broader at the base, nearly embracing the stem. Racemes short few-flowered, axillary or terminal, bracteate, bracts large, wrapping the flower-buds, deciduous, rounded,  $1\frac{1}{2}$  cm. long as broad, shortly dentato-laciniate at the apex, hirsute outside, glabrous inside, 2-bracteolate, bracteoles obliquely roundly obovate, 8 mm. long, 6 mm. broad, rounded at the apex, sparingly shortly dentate, pedicels short, 5 mm. long. Calyx villosa-tomentose outside, shortly pubescent inside, cup concave, lobes acuminate-triangular, acuminate and laciniately



serrate at the apex, teeth 3 mm. long or subentire, 14 mm. long, 7 mm. broad. Petals broadly rounded, shortly mucronate and rounded at the apex, base acute. Stamens 5 mm. long, anthers oblong; carpophore semiglobose, long barbate, carpels nearly 1 mm. long, style 7 mm. long, stigma 2-lobate.

HAB. Randaisan.

Near *R. diffusus*, but differs from it in having more deeply lobed leaves and not prickly branches and petioles. Also near *R. hainanensis* FOCKE (in sched.) from which the present plant is easily distinguishable by elongate denticulate stipules.

**Rubus retusipetalus** HAYATA (Pl. XXVIII) Materials for a Flora of Formosa p. 94. Branches slender, glabrous, angulately striate, spinose, spines longitudinally complanate, dilated at the base, recurved, 2 mm. long. Leaves ovately cordate or oblango-ovate, 9 cm. long, 5 cm. broad, acuminate at the apex, base cordate or truncately cordate, margin serrate, serras cuspidate, membranaceous, obscurely trinerved or pinninerved, primary lateral veins 6-7, curved or nearly straight divaricate at an angle of 40°, glabrous above, glaucous beneath, aculeate on the costas and veins, petioles 3 cm. long, sulcate above, aculeate beneath, stipules linear-filiformed, 1 cm. long, 1 mm. broad, inserted near the base of the petioles. Flowers at the axils of the upper leaves, or terminal, racemose or solitary, long pedunculate, peduncles 3 cm. long, bracts linear or filiformed. Calyx nearly flattened, glabrous outside, velvety pubescent inside, cup nearly flattened 8 mm. in diameter, lobes acuminate oblong, 1 cm. long, acumen terete 4 mm. long, margin tomentose. Petals elongately obovate, 1 cm. long, 5 mm. broad, roundly emarginate at the apex, cuneately narrowed at the base, slightly hirsute downwards. Carpels  $\frac{1}{2}$  mm. long, glabrous, styles 2 mm. long, base hirsute, stigma oblique capitate. Carpophore nearly flattened, tomentose.

HAB. Tōyen: Kōtōsan, (No. 2675).

Near *R. conduplicatus* DUTHIE, but differs from it in having more or less retused or emarginate petals.

**Rubus Rolfei** VIDAL var. **lanatus** HAYATA Fl. Mont. Formos. p. 81. Small shrub, erect densely lanate, at last glabrous. Leaves 5- or rarely 3-lobed



cordately orbicular, 3-5 cm. in diameter, lobes rounded or obtuse, irregularly denticulate, dense lanate on both surfaces, at last glabrous above, prominently tuberculate within veinlets, densely albo- or ferrugineo- lanate beneath, petioles 2-3 cm. long, stipules ovate, lacerate, 12 mm. long. Flowers 2-3-clustered at the apex of branchlets or subaxillary, 2-3-bracteate at the base of calyx, bracts larger, truncate, lacerate, 9 mm. long as broad, submembranaceous. Calyx turbinate  $1\frac{1}{2}$  cm. long, lobes ovate, 9 mm. long, acuminate, outside villose, inside pubescent, thick. Fruits not yet known.

HAB. Seizan, Mt. Morrison.

The present variety differs from the type in having more densely woolly leaves and much larger flowers.

DISTRIB. Type: the Philippine islands.

\***Rubus rosæfolius** SMITH. ; DC. Prodr. II. p. 556 ; HOOK. Ic. Pl. t. 349 ; HOOK. f. Fl. Brit. Ind. II. p. 341 ; HANCE in Journ. Bot. (1878) p. 10, et (1884) p. 42 ; MAXIM. in Mém. Biol. VII. p. 387 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 237 ; DIELS. Fl. Cent. Chin. p. 399 ; HENRY List Pl. Formos. p. 40 ; MATSUM. in Tōkyō Bot. Mag. XVI. p. 3 ; MATSUM. et HAYATA Enum. Pl. Formos. p. 123.

*Rubus chinensis* SER. in DC. Prodr. II. p. 557.

HAB. Kelung, Taitōchō, Bokusekikaku, Bankinsing.

DISTRIB. In the warm regions of China, common in India.

**Rubus shinkensis** HAYATA (Pl. XXIX.) Materials for a Flora of Formosa p. 95. Branches terete, subglabrous, straight, spinose, spines short 2 mm. long, straightly curved, rubescent, narrowed at the base, (cicatrices of spines oblong, 4 mm. long, 1 mm. broad), ramulose, branchlets divaricate straight, pubescent, leaf-buds perulate, perules ovate, entire, obscurely dentate or slightly laciniate, subglabrous, slightly pubescent at the apex, 1 cm. long or shorter. Leaves elongately ovate, 7 cm. long,  $3\frac{1}{2}$  cm. broad, acuminate at the apex, slightly cordate at the base, serrulate or duplicately serrulate, chartaceo-membranaceous, trinerved, 3-lobed, central-lobe ovately acuminate, basal lobes

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\* The Formosan species is a little different from the Japanese plant ; it demands further investigation to decide which of the two is really identical with the type of the named species.



smaller, acute at the apex, rounded or acute at the base on the lower side, central nerve 3-times longer than the basal nerves, basal nerves divaricate from the central at an angle of  $45^\circ$ , pubescent on the nerves, otherwise glabrous, petioles 14 mm. long, canaliculate, pubescent, stipules inserted near the base of the petioles, lanceolately acuminate, 4 mm. long. Flower-bearing branches shorter, 2-3 cm. long, flowers terminal, pedicels 4 mm. long, pubescent. Calyx densely pubescent outside, glabrous inside, lobes ovately triangular, 6 mm. long, acuminate, acumen obtuse. Petals ovate,  $7\frac{1}{2}$  mm. long, 4 mm. broad, obtusely acute at the apex, shortly cuneate at the base, reticulately nervose. Stamens with filaments complanate, 4 mm. long, contracted and filiformed at the apex. Carpophore oblong, elevate, glabrous, carpels hirsute, style filiformed,  $1\frac{1}{2}$  mm. long, hirsute at the base, stigma capitate.

HAB. Shinkō : Kakurei.

This plant is near *R. conduplicatus* DUTHIE, but differs from it in having solitary flowers. Also very near *R. incisus* THUNB., from which this differs in having more acuminate leaves and broader lobes of the calyx.

**Rubus Swinhœi** HANCE in "Ann. Sc. Nat. 5 me série, V. p. 211"; in Journ. Bot. (1884) p. 42, et (1885) p. 323; MAXIM. in Mél. Biol. VIII. p. 380; FORBES et HEMSL. Ind. Fl. Sin. I. p. 237; HENRY List Pl. Formos. p. 40; DIELS Fl. Cent. Chin. p. 391; MATSUM. et HAYATA Enum. Pl. Formos. p. 123.

HAB. Taiton, Kelung, Tamsui.

DISTRIB. China : Kwangtung.

**Rubus tagallus** CHAM. et SCHL. in Linnæa II. p. 9; MAXIM. in Mél. Biol. VIII. p. 389; FORBES et HEMSL. Ind. Fl. Sin. I. p. 237; HENRY List Pl. Formos. p. 40; MATSUM. in Tōkyō Bot. Mag. XVI. p. 4; MATSUM. et HAYATA Enum. Pl. Formos. p. 123.

HAB. Tamsui and Taihoku, Heichōshō.

DISTRIB. China : Kiangsu.

**Rubus taitcensis** HAYATA Materials for a Flora of Formosa p. 96. Branches slightly pubescent, terete, fusco-purpurascens, shortly spinulose, spines 4 mm. long, transversely erecto-recurved, branchlets softly pubescent.



Leaves simple, coriaceous, ovate in outline, slightly cordate at the base, acuminate at the apex,  $5\frac{1}{2}$  cm. long,  $4\frac{1}{2}$  cm. broad, 3-lobed, central lobe elongately ovate,  $3\frac{1}{2}$  cm. broad, acuminate at the apex, slightly contracted at the base, margin slightly dentately serrulate, teeth serrulate, dentate on the sinus between lobes, basal lobe ovate acute at the apex, roundly acute at the base on lower side, trinerved, central nerve  $5\frac{1}{2}$  cm. long, 2-times as long as lateral nerves, lateral nerves  $2\frac{1}{2}$  cm. long, divaricate from the central nerve at an angle of  $45^\circ$ , slightly pubescent above, glabrous at last, glaucous beneath, pubescent on the nerves and veins, veinlets above impressed, elevated beneath, petioles 1 cm. long, pubescent, stipules inserted at the base of the petioles, lanceolate pubescent, 7 mm. long. Flowers terminal, solitary, peduncles 1 cm. long, villosely pubescent. Calyx campanulate,  $2-2\frac{1}{2}$  cm. in diameter, villosely pubescent on both sides, aculeate, prickles minute, 1 mm. long, sparingly dispersed, 5-lobed, lobes triangular-acuminate, 6-12 mm. long, 4 mm. broad. Fruits (syncarp) conico-globose, 1 cm. in diameter. Drupels 2 mm. long, styles 2 mm. long, hirsute.

HAB. Taitō : Shinsuikai.

The present *Rubus* is also near *R. conduplicatus* and *R. incisus*, but differs from them in prickled calyx.

**Rubus taiwanianus** MATSUM. in Tōkyō Bot. Mag. XVI. p. 3; MATSUM. et HAYATA Enum. Pl. Formos. p. 123.

HAB. Taihoku, Sharyōtō, Hikaku, Pachina, Maruyama, Ōkaseki.

### 5. *Fragaria* LINN.

#### *Key to the Formosan Species.*

- Leaflets thinner slightly pubescent, outer sepals much larger than the inner,  
 foliaceous ..... *F. indica*.  
 Leaflets a little thicker, densely villose beneath, outer sepals as large as the  
 inner, small, lanceolate. .... *F. vesca* var. *minor*.

**Fragaria indica** ANDR. ; SER. in DC. Prodr. II. p. 571; S. MOORE in Journ. Bot. (1878) p. 138; HOOK. f. Fl. Brit. Ind. II. p. 343; FRANCHET



Pl. David. p. 110; WIGHT Ic. Pl. Ind. Or. t. 989; MIQ. Prol. Fl. Jap. p. 225; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 129; FORBES et HEMSL. Ind. Fl. Sin. I. p. 240; HENRY List Pl. Formos. p. 40; ITÔ et MATSUM. Tent. Fl. Lutch. p. 452; MATSUM. et HAYATA Enum. Pl. Formos. p. 124.

*Fragaria malayana* ROXB. Fl. Ind. II. p. 520.

*Duchesnea fragarioides* MIQ. Fl. Ind. Bat. I. pt.—1. p. 372.

*Duchesnea fragiformis* SMITH. in Trans. Linn. Soc. X. p. 373.

*Duchesnea chrysantha* MIQ. Fl. Ind. Bat. I. pt.—1. p. 372.

HAB. Kussaku, Tamsui.

DISTRIB. Japan, China, Ins. Malaya and India.

***Fragaria vesca* LINN. var. *minor* HAYATA** Materials for a Flora of Formosa p. 97. Leaves and flowers much smaller than the type, otherwise as in the type. Leaves trifoliate, leaflets rhomboid, cuneate at the base, dentate, terminal one 1 cm. long, 8 mm. broad. Flowers 7 mm. in diameter. Petals orbicular, rounded at the apex, abruptly contracted at the base,  $3\frac{1}{2}$  mm. in diameter.

HAB. Mt. Morrison, Tōzan.

The fruits of this *Fragaria* are edible and delicious.

## 6. *Potentilla* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Leaflets 3-5. (2)  
     Leaflets more than 7. (3)
- (2) Leafles dark, slightly hairy above, but whitish woolly beneath, silverly shining ..... *P. discolor*.  
     Leaflets barbately hairy above and below, concolour ..... *P. gelida*.
- (3) Leaflets silky white beneath ..... *P. leuconota* var. *morrisonicola*.  
     leaflets whitish beneath, never silky ..... *P. chinensis*.

***Potentilla chinensis* SER.** in DC. Prodr. II. p. 581; MAXIM. in Prim. Fl. Amur. p. 96; FRANCHET Pl. David. p. 112; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 338; FORBES et HEMSL. Ind. Fl. Sin. I. p. 241; DIELS Fl.



Cent. Chin. p. 403; PALIBIN Conspect. Fl. Koreæ I. p. 81; MATSUM. et HAYATA Enum. Pl. Formos. p. 125.

*Potentilla multifida* BAKER et S. MOORE in Journ. Linn. Soc. XVII. p. 381.

HAB. Shintiku, Taitôchô, Hinan, Rokuryô.

DISTRIB. Mandshuria, Japan, China and Corea.

**Potentilla discolor** BUNGE; WALP. Rep. II. p. 30; HANCE in Journ. Bot. (1878), p. 11; FRANCHET Pl. David. p. 122; FORBES et HEMSLEIGH. Ind. Fl. Sin. I. p. 241; HENRY List Pl. Formos. p. 40; DIELS Fl. Centr. Chin. p. 403; PALIBIN Conspect. Fl. Koreæ I. p. 81; MATSUM. et HAYATA Enum. Pl. Formos. p. 125.

*Potentilla formosana* HANCE in "Ann. Sc. Nat. 5 me. série, V. p. 212," et in Journ. Linn. Soc. XIII. p. 79.

HAB. Shintiku, Tamsui.

DISTRIB. China, Japan and Corea.

**Potentilla gelida** C.A. MEY; LEDEB. Fl. Ross. II. p. 59; HOOK. f. Fl. Brit. Ind. II. p. 357; DIELS Fl. Tin-ling-shan, in ENGL. Bot. Jahrb. XXXVI. Beibl. p. 56; HAYATA in Tôkyô Bot. Mag. XX. p. 73; HAYATA Fl. Mont. Formos. p. 83.

*Potentilla grandiflora* LINN.; WAGNER Deut. Fl. ed-3, p. 399; THOMÉ Fl. Deut. Ost. u. Schw. III. p. 70.

HAB. Mt. Morrison.

DISTRIB. Extends to Europe, northern India, central China, Japan, eastern Siberia and the Kurile and Aleutian islands.

The species seems to vary over a wide range and especially so in the size of flowers.

**Potentilla leuconota** DON var. **morrisonicola** HAYATA Fl. Mont. Formos. p. 83. Stem sericeo-pilose, erect, nearly 15 cm. long. Leaves subradical pinnate, oblanceolate in outline, obtuse, 10 cm. long, nearly 19-foliolate, leaflets sessile, obovate, obtuse, 1 cm. long, sharply dentate, pilose above, sericeously pilose, petioles adpressingly pilose, stipules scaly, nearly 3 cm. long, adnate to the petioles at the base, entire. Cauline leaves nearly the same as radical one, much smaller, a very few, often 1-2 on the middle of



the stem. Flowers 9-8-clustered at the apex of the stem, nearly subumbellate, 1-2-bracteate, pedicels 1 cm. long. Flowers patent, 8 mm. in diameter, bracteoles narrowed, entire. Calyx-lobes ovate, acute, sericeous. Petals broadly obovate, base slightly narrowed, rounded at the apex. Stamens 10 or (—20?). Stones nearly 15, glabrous.

HAB. Mt. Morrison.

DISTRIB. The type is rather of the alpine character, being found in high mountains of Asia such as the Himalaya and those of Borneo and western central China.

The present plant differs from the type mainly in the absence of whorled leaves at the base of an umbel.

**Potentilla pensylvanica** LINN.; DC. Prodr. II. p. 581; MAXIM. Ind. Fl. Pek. in Prim. Fl. Amur. p. 471; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 131, et II. p. 340; FORBES et HEMSL. Ind. Fl. Sin. I. p. 243; DIELS Fl. Cent. Chin. p. 403; MATSUM. et HAYATA Enum. Pl. Formos. p. 125.

HAB. Senton.

DISTRIB. Caucasus, central China and northern America.

## 7. *Sibbaldia* LINN.

**Sibbaldia procumbens** LINN. Sp. Pl. ed-2, p. 406; DIELS Fl. Centr. Chin. p. 404, et Fl. Tsin-ling-shan, in ENGL. Bot. Jahrb. XXXVI. Beibl. p. 56; THOMÉ Fl. Deut. Ost. u. Schw. III. p. 60; ASCHERSON et GRÆBN. Syn. Mitt. Fl. VI.—1. p. 661; WAGNER Deut. Fl. ed-3, p. 361; HAYATA in Tōkyō Bot. Mag. XV. p. 98; HAYATA Fl. Mont. Formos. p. 84.

*Potentilla Sibbaldi* HALLER f. in "Sin. Mus. Helvet. I. p. 51" HOOK. f. Fl. Brit. Ind. II. p. 345.

*Sibbaldia cuneata* KUNZE, in Linnæa XX. p. 53; EDGEW. in Journ. Linn. Soc. XX. p. 44.

HAB. Mt. Morrison.

DISTRIB. This plant, having had a wide range in the glacial period, is now found here and there in the polar and alpine regions of Europe and Asia.



8. *Agrimonia* LINN.

**Agrimonia Eupatoria** LINN. Sp. Pl. ed-2, p. 643; DC. Prodr. II. p. 587; LEDEB. Fl. Ross. II. p. 31; HOOK. f. Fl. Brit. Ind. II. p. 361; FORBES et HEMSL. Ind. Fl. Sin. I. p. 246; HENRY List Pl. Formos. p. 40; DIELS Fl. Cent. Chin. p. 404 (var.); PALIBIN Conspect. Fl. Koreæ I. p. 83; MATSUM. et HAYATA Enum. Pl. Formos. p. 126.

*Agrimonia pilosa* LEDEB. Fl. Ross. II. p. 32; HANCE in Journ. Linn. Soc. XIII. p. 80; FRANCHET Pl. David. p. 114; DC. Prodr. II. p. 588; HOOK. f. Fl. Brit. Ind. II. p. 361; ENGL. et MAXIM. in ENGL. Bot. Jahrb. VI. p. 63.

*Agrimonia viscidula* BUNGE var. *japonica* MIQ. Prol. Fl. Jap. p. 133;  
FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 133.

HAB. Exact locality is not yet known.

DISTRIB. Europe, North Africa, Asia, and northern America.

9. *Rosa* LINN.

*Dichotomous Key to the Formosan Species.*

- (1) Flowers bracteate at the base of the calyx, densely hairy, bracts  
fimbriate or toothed, flowers 8 cm. in diameter, petals notched....  
..... *R. bracteata*  
Flowers not bracteate at the base of the calyx. (2)  
(2) Calyx prickly, flowers 7 cm. in diameter..... *R. laevigata*.  
Calyx not prickly. (3)  
(3) Leaves small, 5 cm. long including petioles, leaflets very small and  
many, 1 cm. long, prickles long, 1-1½ cm. long, opposite, besides  
with minute prickles, calyx-lobes long linear. .. *Rosa morrisonensis*.  
Leaves much larger, longer than 5 cm., leaflets also much larger;  
prickles much smaller, no minute prickles besides. (4)  
(4) Leaflets small 2½ cm. long at most, shining above. .... *R. Lucia*.  
Leaflets larger, over 3 cm. (5)



- (5) Flowers profusely paniculate, leaves smaller ..... *R. multiflora*.  
 Flowers solitary, leaves larger ..... *R. indica*.

**Rosa bracteata** WENDL. ; DC. Prodr. II. p. 602 ; Bot. Mag. t. 1377 ;  
 FORBES et HEMSL. Ind. Fl. Sin. I. p. 249 ; BAKER in Gard. Chron. n. s.  
 XXIV. p. 199 ; HENRY List Pl. Formos. p. 40 ; MATSUM. et HAYATA  
 Enum. Pl. Formos. p. 126.

*Rosa involucrata* BRAAM, ex WALP. Rep. II. p. 12.

HAB. Tamsui, Pachina, Taitōchō, Hinan, Rokuryō.

DISTRIB. Loo-choo and China.

**Rosa indica** LINN. Sp. Pl. ed-2, p. 705 ; DC. Prodr. II. p. 600 ; LOUR.  
 Fl. Cochinch. ed-WILLD. p. 396 ; HOOK. f. Fl. Brit. Ind. II. p. 364 ; FRANCH.  
 et SAVAT. Enum. Pl. Jap. I. p. 136 ; BAKER in Gard. Chron. n. s. XXIV.  
 p. 199 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 249 ; HENRY List Pl. Formos.  
 p. 40 ; ITŌ et MATSUM. Tent. Fl. Lutch. p. 455 ; DIELS Fl. Cent. Chin.  
 p. 405.

*Rosa semperflorens* WILLD. ; Bot. Mag. t. 284 ; ROXB. Fl. Ind. II. p. 514.

*Rosa chinensis* WILLD. Sp. Pl. II. p. 1078 ; ROXB. Fl. Ind. II. p. 513.

*Rosa longifolia* WILLD. Sp. Pl. II. p. 1079.

Var. **formosana** HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p.  
 127.

Sepals very long, lanceolate, 3-4 cm. long, laciniate, lobes serrate.

HAB. Shintiku, Bankinsing.

**Rosa lævigata** MICH. "Fl. Bor. Am. I. p. 295" ; DC. Prodr. II. p. 600 ;  
 FORBES et HEMSL. Ind. Fl. Sin. I. p. 250 ; HENRY List Pl. Formos. p. 40 ;  
 DIELS Fl. Cent. Chin. p. 406 ; MATSUM. et HAYATA Enum. Pl. Formos. p.  
 127.

*Rosa sinica* AIT. Hort. Kew. ed-2, III. p. 261 ; Bot. Mag. t. 2847 ;  
 BENTH. Fl. Hongk. p. 106.

*Rosa nivea* DC. Prodr. II. p. 599.

*Rosa Amygdalifolia* SER. in DC. Prodr. II. p. 601.

HAB. Taichū : Tōjōhō, Kusshaku, Shintengai.



DISTRIB. Japan, China: Chekiang, Kiangsi, Fokien, Hupeh, Szechuen, Kwangtung, Hongkong.

**Rosa Luciae** FRANCH. et ROCH. in FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 135, et II. p. 344; ENGL. et MAXIM. in ENGL. Bot. Jahrb. VI. p. 63; Bot. Mag. t. 7421; FORBES et HEMSL. Ind. Fl. Sin. I. p. 251; HENRY List Pl. Formos. p. 40; ITÔ et MATSUM. Tent. Fl. Lutch. p. 454; PALIBIN Conspect. Fl. Koreæ I. p. 84; MATSUM. et HAYATA Enum. Pl. Formos. p. 128.

*Rosa moschata* BENTH. Fl. Hongk. p. 106.

HAB. Shintiku, Biōritsu, Tamsui.

DISTRIB. Loo-choo, Hongkong, China and Corea.

**Rosa morrisonensis** HAYATA (Pl. XXX.) Materials for a Flora of Formosa p. 97. Shrubs very spinose, spines whitish, straight, subulate, branched, branches patent, slender. Leaves pinnate, 7-11 foliolate, glabrous elliptical in outline, 5 cm. long including petioles,  $2\frac{1}{2}$  cm. broad, petioles slender, minutely aculeate, leaflets subsessile, broadly obovate or nearly rotundate, 13 cm. long, 7 mm. broad, denticulate at the middle, dentate towards the apex, teeth acute, stipules adnate to the petioles, free at the apex, acute, glabrous, glanduloso-serrulate, serrulas sharp. Flowers nearly racemose along the branchlets, shortly pedunculate, peduncles  $1\frac{1}{2}$  cm. long, gradually dilate at the apex, reaching the calyx-tube. Calyx-tube (after flowering) pyriformed, 8 mm. long, contracted at the apex, attenuate at the base, lobes entire lanceolate, long acuminate, lanato-pubescent inside, sparingly pubescent outside, margin sparingly glandulose. Petals not yet known. Carpels 4-5, trigonous 5 mm. long, hirsute at the apex, styles persistent.

HAB. in Mt. Morrison.

This *Rosa* is near *R. Willmottiae* HEMSL. and also *R. Webbiana* WALL.; but differs from the both in having larger lobes of calyx and more acutely serrated leaves. Also near *R. xanthiana* LINDL., but quite separable by the narrower sepals and more acutely serrated leaves.

**Rosa multiflora** THUNB. Fl. Jap. p. 214; DC. Prodr. II. p. 598 LINDL. Ros. Monogr. p. 119; BAKER et S. MOORE in Journ. Linn. Soc. XVII.



p. 382; HOOK. f. Fl. Brit. Ind. II. p. 344; Bot. Mag. t. 1059; FORBES et HEMSL. Ind. Fl. Sin. I. p. 253; DIELS Fl. Cent. Chin. p. 405 (var.); MATSUM. et HAYATA Enum. Pl. Formos. p. 128.

HAB. Pachina, Biōritsu, Tamsui, Tainan.

DISTRIB. Japan, central and southern China and the Philippines.

## 10. *Pyrus* LINN.

### *Dichotomous Key to the Formosan Species.*

- (1) Leaves simple. (2)  
       Leaves compound. (3)
- (2) Leaves roundly ovate shortly cuspidate, fruits small, 7 mm. in diameter ..... *P. Kawakamii*.  
       Leaves elongately ovate, elliptical acuminate or acute, fruits larger depressingly globose, 3½ cm. in diameter. .... *P. formosana*.
- (3) Leaflets sharply serrulate, fruits usually 4-celled. ....  
       ..... *P. aucuparia* var. *randaiensis*.  
       Leaflets less sharply serrulate, fruits 3-celled. ....  
       ..... *P. aucuparia* var. *trilocularis*.

***Pyrus aucuparia* var. *randaiensis* HAYATA** Materials for a Flora of Formosa p. 98. Branches strong, ashy or dark-purple-rubescant, cicatrices of leaves transversely ring-like, lenticels globose. Leaves pinnate, narrowly elliptical in outline, 13 cm. long, 4 cm. broad, lateral pinnae 8-9-juged, lower and upper ones shorter, middle ones longer, pinnae sessile, lowest ones oblong, 2 cm. long, 12 mm. broad, middle ones oblong-narrowed 4½ cm. long, 12 mm. broad, acuminate at the apex, obliquely rounded at the base, obtuse on the upper side, longer in the lower side, roundly cordate, costas impressed above, elevated beneath, lateral veins impressed above, elevated beneath, hirsute beneath on the costas and veins, glabrous on both surfaces, pallid beneath, margin sharply serrulate, serrulas ascendent, terminal pinna oblong-obovate, 3 cm. long, 13 mm. broad, interjuges 1 cm. long, shortly stipellate, stipels subulate, rhaches winged, glabrous and sulcate above ferrugineo-hirsute beneath, petioles 4 cm. long, glabrous above, winged,



sulcate, dilate at the base, stipules linear, 9 mm. long, connate at the base, somewhat fleshy. Leaf-buds acutely ovate, perules broadly ovate, roundly apiculate at the apex, glabrous. Cymes terminal 8 cm. long, 9 cm. broad, peduncles and pedicels subglabrous or sparingly hirsute, rubescent, lenticels elongate, pedicels 8 mm. long. Fruits globoso-pyriformed, 5 mm. in diameter, generally 4-celled, rarely 3- or 5-celled, calyx-lobes persistent, lobes triangular, obtuse.

HAB. Randaizan.

There is nothing like this at Kew. It is easily distinguishable by the minutely and very shapely toothed leaves.

**Pyrus aucuparia** var. **trilocularis** HAYATA Materials for a Flora of Formosa p. 99. Fruits nearly globose, nearly 1 cm. in diameter, 3-celled, cells 1-2-seeded, or reduced to 1-seeded. Seeds compressingly oblong,  $3\frac{1}{2}$  mm. long, reddish, otherwise the same as the type.

HAB. Seizan.

Very like the tipe, but differs in having 3-celled fruits.

**Pyrus Kawakamii** HAYATA Materials for a Flora of Formosa p. 99. Branchlets dark-purpurascens, glabrous, longitudinally rugulose, noted with annular leaf-traces. Leaf-buds cylindrical, 12 mm. long, perules imbricate, triangular, obtusely acute, margin ciliate. Leaves near the apex of the branchlets approximately 3-4-fascicled, long petiolate, coriaceous, patent, broadly oblong or ovately oblong, 7 cm. long, 5 cm. broad, shortly cuspidately acute at the apex, or acute, acute at the base, or obtuse, crenulately serrulate on the margin, teeth obtuse, glabrous on both sides, veins slightly elevated, pallid beneath, petioles 3 cm. long. Fruits racemose, racemes 1 cm. long, pedicellate, pedicels longer, 2 cm. long. Drupes globose, 9 mm. in diameter, rubescent when dried, sparingly punctate, (points subalbicans minute, globose), 2-3-seeded. Seeds quadrantiformed convex on the back, 4 mm. long, 2 mm. broad, obtuse on both ends, dark-reddish purpurascens.

HAB. Nantō.

Very like *P. sinensis* from which this is distinguishable by the leaves which are acute at both ends. Also near *P. Prattii* HEMSL. and *P.*



*baccata* from which this differs in having much smaller fruits and oblong leaves acute at both ends.

**Pyrus formosana** KAWAKAMI et KOIZUMI in HAYATA Materials for a Flora of Formosa p. 100; KAWAKAMI in Tōkyō Bot. Mag. XXV. p. 146. Branches longitudinally rugose, fusco-purpurascens or cinerascens, noted transversely with leaf-traces. Leaf-buds ovate, 5 mm. long, perules triangularly acute, glabrous. Leaves 2-3-clustered at the apex of branches, patent, membranaceo-coriaceous, elongately oblong or ovately oblong, 9-10 cm. long, 4 cm. broad, acute or acuminate at the apex, acute at the base, glabrous on both surfaces, pallid beneath, veinlets transversely elevated primary veins 9-10 on each side, inconspicuous above, elevated beneath, costas sulcate above, prominent beneath, petioles 3 cm. long, sulcate above, glabrous. Fruits apple-like, depressingly globose, 3 cm. long, 3½ cm. broad, yellowish when matured.

HAB. Rinkiho.

This differs from *P. Mallus* in the serration and the shape of the leaves.

## 11. *Cotoneaster* MEDIK.

### *Dichotomous Key to the Formosan Species.*

- (1) Flowers in cymes, cymes terminal. . . . . *C. formosana*.  
Cymes on shortened lateral branches. (2)
- (2) Stones completely included. . . . . *C. taitensis*.  
Stones partly included, the upper half exposed. . . . . *C. Koizumii*.

**Cotoneaster formosana** HAYATA Materials for a Flora of Formosa p. 101. Branches straight, rubescent, cinereo-pubescent, at last glabrate, sometimes with branches turning to the spines. Leaves 3-5 clustered at the apex of the leaves, shortly petioled, oblong-obovate, 23 mm. long, 12 mm. broad, truncately emarginate at the apex, truncate at the base, quite entire canescently pubescent, at last glabrous above, pallid beneath, petioles 4 mm. long. Flowers white? 7 mm. in diameter, corymbose, (corymbs bracteate), at the axils of the upper leaves, or terminal. Calyx 4½ mm. in



diameter, lobes 5, triangular, pilose, tube very pilose inside. Petals 5, orbicular, 3-4 mm. long as broad, emarginate at the apex, slightly contracted at the base. Stamens  $\infty$ . Carpels 5, mostly pilose, styles glabrous.

HAB. Taitō.

**Cotoneaster Koizumii** HAYATA Materials for a Flora of Formosa p. 101.

Branches dark ashy, longitudinally rugose, branchlets divaricate, spinose towards the apex, densely pubescent, (hairs soft), leafy. Leaves alternately 2-3-clustered towards the apex of the branchlets (leafy branches very short  $\frac{1}{2}$  mm. long), obovate or spathulately obovate, 18 mm. long, 11 mm. broad, roundly emarginate and shortly apiculate at the apex, cuneately obtuse at the base, quite entire, coriaceous, nearly shining above, pallid beneath, slightly reddish on both surfaces when dried, petioles 3 mm. long. Cymes terminal on the apex of the lateral branchlets, sessile,  $2\frac{1}{2}$  cm. long, 3 cm. broad, glabrous. Drupes depressingly globose, 4 mm. long, 5 mm. broad. Calyx (fructiferous) suburceolate-globose, lobes persistent, broadly triangular, nearly including stones. Stones 5, naked at the apex, roundly quadrantiformed  $2\frac{1}{2}$  mm. long,  $1\frac{3}{4}$  mm. broad, fusco-rubescens.

HAB. Pinan.

The present plant is very distinct from other species of the genus, in having obovate or even spathulate leaves which are emarginate at the apex. From *C. formosana*, it differs in the inflorescence on the shortened branchlets standing nearly alternately on a side-branch.

**Cotoneaster taitōensis** HAYATA Materials for a Flora of Formosa p.

102. Shrub, branches very ashy-dark, nearly shining, longitudinally rugose, branchlets divaricate shortly sparingly pubescent, spines simple 1 cm. long. Leaves alternately approximately disposed on the shortest lateral branchlets, or 3-4-clustered on the apex of the very short branchlets, obovately spathulate or spathulate,  $3\frac{1}{2}$  cm. long, 1 cm. broad, truncately emarginate at the apex, shortly apiculate, entire on the margin, slightly pubescent, at last glabrous, cuneately narrowed at the base, coriaceous, nearly shining above, pale beneath, rubescent when dried, petioles 3 mm. long. Fruits paniculate, panicles terminal on the short branchlets. Drupes globose,  $\frac{1}{2}$  cm.







"Enum. Pl. Formos. p. 130," and finally identified with *P. Notoniana* WIGHT et ARN. var. *eugenifolia* HOOK. by Mr. G. KOIZUMI in "Tôkyô Bot. Mag. XXIII. p. 170. While studying at Kew, I examined the types of the species above mentioned, and found that they are not at all in accordance with the present plant. They differs from our plant besides many other points in having much larger and thicker or even coriaceous leaves.

**Photinia serrulata** HEMSLEY. Ind. Fl. Sin. I. p. 263; HAYATA Materials for a Flora of Formosa p. 104.

HAB. Taitô, Daishinzan.

So far as the external comparison is concerned, the present plant is quite referable to this species. My plant lacks flowers.

**Photinia taiwanensis** HAYATA (Pl. XXX.) Materials for a Flora of Formosa p. 104. Branches ashy-dark, or fusco-purpurascens, longitudinally rugulose, lenticels minute, branchlets slender, albo-tomentose. Leaves obovately-oblong or oblanceolate, 8 cm. long, 3 cm. broad, cuspidately acuminate at the apex, acute at the base, minutely serrulate upwards, serrulas minute, remotely serrulate downwards, quite entire near the base, chartaceous, at first covered with soft tomentum, at last nearly glabrous, costas and veins slender, petioles 7 mm. long. Flowers shortly umbellate, cymose, cymes terminal, 2 cm. long, as broad, pedicels 1 cm. long, bracts subulate, 2 mm. long. Calyx campanulate, glabrous,  $2\frac{1}{2}$  mm. long, lobes patent, triangular or broadly rounded, mucronate, 1 mm. long,  $1\frac{1}{2}$  mm. broad. Petals 5, rounded,  $3\frac{1}{2}$  mm. long as broad, roundly truncate or acute subemarginate or not emarginate at the apex, abruptly cuspidately obtuse near the base, stamens nearly 15, filaments slightly dilate at the base. Ovary nearly inferior albo-tomentose at the apex, 2-celled, styles 2, entirely connate or slightly distinct at the apex, hirsute at the base, stigma oblique capitate. Fruits elliptico-pyriformed, 6 mm. long,  $4\frac{1}{2}$  mm. broad, long pedunculate, peduncles 4 mm. long.

The Formosan plant is included in *P. variabilis* by W. B. HEMSLEY in Ind. Fl. Sin. I p. 263. While studying at Kew, I examined all specimens



included under the same name by the eminent authority, and found that the Formosan specimens are very distinct from any of the other forms of the species collected in continental China.

This is near *P. arguta*, but differs in having more minutely toothed leaves.

HAB. Taihoku, Kōshūn, Pachina, Hikaku, Tamsui.

DISTRIB.

### 13. *Eriobotrya* LINDL.

***Eriobotrya japonica*** LINDL. in Trans. Linn. Soc. XIII. p. 102; DC. Prodr. II. p. 631; SIEB. et ZUCC. Fl. Jap. I. p. 182, t. 97; HOOK. f. Fl. Brit. Ind. II. p. 372; WIGHT Ic. Pl. Ind. Or. t. 226; MIQ. Prol. Fl. Jap. pp. 229, et 372; MAXIM. in Mél. Biol. IX. p. 175; FORBES et HEMSL. Ind. Fl. Sin. I. p. 261; HENRY List Pl. Formos. p. 41; DIELS Fl. Cent. Chin. p. 388; MATSUM. et HAYATA Enum. Pl. Formos. p. 129.

*Cratægus bibas* LOUR. Fl. Cochinch. ed-WILLD. p. 391.

*Mespilus japonica* THUNB. Fl. Jap. p. 206.

*Photinia japonica* FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 142.

HAB. Shintiku, (cultivated).

DISTRIB. Spontaneous in China, cultivated in Japan.

### 14. *Raphiolepis* LINN.

***Raphiolepis indica*** LINDL.; DC. Prodr. II. p. 630; BENTH. Fl. Hongk. p. 107; MAXIM. in Mél. Biol. IX. p. 181; FORBES et HEMSL. Ind. Fl. Sin. I. p. 264; MATSUM. et HAYATA Enum. Pl. Formos. p. 128.

*Cratægus indica* LINN. Sp. Pl. ed-2, p. 683; Bot. Mag. t. 1726.

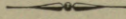
*Cratægus rubra* LOUR. Fl. Cochinch. ed-WILLD. p. 391.

HAB. Sharyōtō, Jitsugetsutan, Holisha, South Cape.

DISTRIB.

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**NOTICE.**

Owing to the limitation of pages of this fascicle, it has become impossible to treat here all the Polypetalous plants. The author is, therefore, obliged to be content with giving families from Ranunculaceæ to Rosaceæ in this fascicle. As copper-plates had been already finished, illustrations of some families between Saxifrageæ to Cornaceæ are given here. Families from Saxifrageæ upwards will be treated in the next fascicle.









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„ <i>diffusus</i> . . . . .	232	<i>Sagina</i> LINN. . . . .	69
„ <i>elegans</i> HAYATA. . . . .	225	„ <i>Linnaei</i> PRESL. . . . .	69
„ <i>fasciculatus</i> DUTHIE. . . . .	235	„ <i>maxima</i> A. GRAY. . . . .	69
„ <i>formosensis</i> O. KUNTZE. . . . .	226	„ <i>procumbens</i> THUNB. . . . .	69
„ <i>fraxinifolius</i> POIR. . . . .	226	„ <i>sinensis</i> HANCE . . . . .	69
„ <i>Hamiltonianus</i> SER. . . . .	228	<i>Sambucus japonica</i> THUNB. . . . .	160
„ <i>hirsutus</i> HAYATA. . . . .	227	Samydacæ. . . . .	(13)
„ <i>incisus</i> THUNB. . . . .	234	Sapindacæ. . . . .	150
„ <i>incisus</i> . . . . .	235	„ . . . . .	(9)
„ <i>Kawakamii</i> HAYATA. . . . .	227	„ . . . . .	(11)
„ <i>Lambertianus</i> SER. . . . .	228	„ . . . . .	(12)
„ <i>malifolius</i> FOCKE. . . . .	228	„ . . . . .	(10)
„ <i>moluccanus</i> LINN. . . . .	228	<i>Sapindus</i> LINN. . . . .	152
„ <i>Morii</i> HAYATA. . . . .	229	„ <i>Mukorossi</i> GERTN. . . . .	152
„ <i>nantensis</i> HAYATA. . . . .	229	<i>Saurauja</i> WILLD. . . . .	88



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 " . . . . . (12)  
 " . . . . . (13)  
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 " *Noronhae* REINW. . . . . 89  
*Schmiedelia Cobbæ* DC. . . . . 151  
 " *Rheedii* WIGHT. . . . . 151  
 " *villosa* WIGHT. . . . . 151  
*Schoepfia* SCHREB. . . . . 129  
 " *Sp.* . . . . 129  
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 " *chinensis* et *S. acuminata* CLOS. . . 62  
 " *crenata* CLOS. . . . . 62  
 " *Oldhami* HANCE. . . . . 62  
*Scopolia aculeata* SM. . . . . 120  
*Scytalia Longan* ROXB. . . . . 153  
*Senebiera* POIR. . . . . 54  
 " *integrifolia* DC. . . . . 54  
 " *pinnatifida* HENRY. . . . . 54  
*Sesbania* PERS. . . . . 178  
 " *egyptiaca*. . . . . 178  
*Sibbaldia* LINN. . . . . 238  
 " *cuneata* KUNZE. . . . . 238  
 " *procumbens* LINN. . . . . 238  
*Sida* LINN. . . . . 95  
 " *acuta* BURM. . . . . 96  
 " *asiatica* LINN. . . . . 97  
 " *carpinifolia* LINN. . . . . 96  
 " *cordifolia* LINN. . . . . 95  
 " *indica* LINN. . . . . 97  
 " *humilis* WILLD. . . . . 95  
 " *mysorensis* W. et A. . . . . 96  
 " *rhombifolia* LINN. . . . . 96  
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*Silene* LINN. . . . . 68  
 " *Fortunei* VIS. . . . . 68  
*Simarubæ*. . . . . 125  
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 " *pusilla* ROXB. . . . . 48  
*Skimmia* THUNB. . . . . 121  
 " *japonica* THUNB. . . . . 121  
*Sloanea* LINN. . . . . 109  
 " *hongkongensis* HEMSL. . . . . 109  
*Smithia* AIT. . . . . 179  
 " *ciliata* ROYLE. . . . . 180  
 " *Nagasaki* HAYATA. . . . . 179  
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*Sophora* LINN. . . . . 207  
 " *flavescens* AIT. . . . . 206  
 " *tomentosa* LINN. . . . . 206  
*Spiræa* LINN. . . . . 220  
 " *fortinosana* HAYATA. . . . . 220  
 " " HAYATA var. *brevistyla*  
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 " *japonica* LINN. . . . . 220  
 " *morrisonicola* HAYATA. . . . . 221  
 " *prunifolia* SIEB. et ZUCC. . . . . 221  
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*Stachyurus himalaicus* HOOK. f. et THOMS. 88  
 " *præcox* SIEB. et ZUCC. . . . . 88  
*Stauntonia* DC. . . . . 38  
 " *hexaphylla* DECNE. . . . . 38  
*Stellaria* LINN. . . . . 71  
 " *aquatica* SCOP. . . . . 73  
 " *aquatica* POLL. . . . . 72  
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 " *media* LINN. . . . . 73  
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 " *saxatilis* HAM. . . . . 72  
 " *stellato-pilosa* HAYATA. . . . . 71  
 " *uliginosa* MURRAY. . . . . 72  
 " *undulata* THUNB. . . . . 72  
*Stephania* LOUR. . . . . 36  
 " . . . . . 35  
 " *dahurica* DC. . . . . 37  
 " *hernandifolia* WALP. . . . . 36  
 " *hernandifolia* . . . . . 36  
 " *tetrandra* . . . . . 36  
 " *longa* LOUR. . . . . 37  
 " *tetrandra* S. MOORE . . . . . 37  
*Sterculiaceæ* . . . . . 102  
 " . . . . . (9)  
*Sterculia* LINN. . . . . 102  
 " *lanceolata* CAV. . . . . 103  
 " *nobilis* R. BROWN . . . . . 102  
 " *platanifolia* LINN. . . . . 103  
 " *pyriformis* BUNGE. . . . . 103  
 " *tomentosa* THUNB. . . . . 103  
*Suriana* LINN. . . . . 125  
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*Talinum* ADANS. . . . . 74  
 " *crassifolium* WILLD. . . . . 74  
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 " . . . . . (8)  
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<i>TamaliX chinensis</i> SIEB. et ZUCC. . . . .	75	<i>Turpinia</i> VENT. . . . .	160
„ <i>juniperina</i> BUNGE . . . . .	75	„ <i>pomifera</i> DC. . . . .	160
<i>Taonabo japonica</i> SZYSZ. . . . .	84	<i>Unona hamata</i> DUNAL . . . . .	34
<i>Tephrosia</i> PERS. . . . .	178	„ <i>odoratissima</i> et <i>hamata</i> ROXB. . . . .	34
„ <i>purpurea</i> PERS. . . . .	178	„ <i>uncinata</i> DC. . . . .	34
<i>Ternstroemiaceæ</i> . . . . .	83	<i>Urtia</i> DESV. . . . .	188
„ . . . . .	(8)	„ <i>crinita</i> DESV. . . . .	188
<i>Ternstroemia</i> LINN. . . . .	84	„ <i>hamosa</i> WALL. . . . .	188
„ <i>japonica</i> THUNB. . . . .	84	„ „ <i>formosana</i> MATSUM. . . . .	188
<i>Thalamifloral</i> . . . . .	6	<i>Urtia logopoides</i> DC. . . . .	188
<i>Thalictrum</i> . . . . .	25	„ <i>picta</i> DESV. . . . .	189
„ . . . . .	(16)	<i>Urena</i> LINN. . . . .	98
„ <i>Urbaini</i> . . . . .	25	„ <i>diversifolia</i> WALP. . . . .	98
„ <i>Fauriei</i> HAYATA . . . . .	25	„ <i>heterophylla</i> SMITH . . . . .	97
<i>Thea</i> LINN. . . . .	89	„ <i>lobata</i> LINN. . . . .	97
„ <i>biflora</i> HAYATA . . . . .	92	„ <i>lobata</i> var. <i>tomentosa</i> MIQ. . . . .	98
„ <i>brevistyla</i> HAYATA . . . . .	90	„ <i>Lappago</i> SMITH. . . . .	98
<i>Thea caudata</i> (WALL) . . . . .	90	„ <i>morifolia</i> DC. . . . .	97
„ <i>chinensis</i> SIMS . . . . .	91	„ <i>muricata</i> DC. . . . .	97
„ <i>gracilis</i> (HEMSL.) . . . . .	90	<i>Uvaria</i> LINN. . . . .	33
„ <i>reticulata</i> . . . . .	93	„ <i>clusiflora</i> MERRILL . . . . .	34
„ <i>salicifolia</i> SEEM. . . . .	90	„ <i>japonica</i> LINN. . . . .	33
„ <i>Sasanqua</i> . . . . .	92	„ <i>uncata</i> LOUR. . . . .	34
„ <i>shinkoensis</i> HAYATA . . . . .	92	„ Sp. HAYATA . . . . .	33
„ <i>tenuiflora</i> HAYATA . . . . .	91	<i>Ventilago</i> GERTN. . . . .	141
<i>Tiliaceæ</i> . . . . .	106	„ <i>elegans</i> HEMSL. . . . .	141
„ . . . . .	(8)	„ <i>leiocarpa</i> BENTH. . . . .	141
„ . . . . .	(9)	<i>Vicia</i> LINN. . . . .	192
„ . . . . .	(11)	„ <i>angustifolia</i> ROTH. . . . .	192
<i>Tinospora dentata</i> DIELS . . . . .	38	„ <i>Cracca</i> LINN. . . . .	193
<i>Toddalia</i> JUSS. . . . .	120	„ <i>hirsuta</i> KOCH . . . . .	193
„ <i>aculeata</i> PERS. . . . .	120	„ <i>sativa</i> LINN. . . . .	193
<i>Tribulus</i> LINN. . . . .	111	„ <i>tetrasperma</i> MENCH. . . . .	194
„ <i>cistoides</i> LINN. . . . .	112	<i>Vigna</i> SAV. . . . .	200
„ <i>terrestris</i> LINN. . . . .	112	„ <i>Cotiang</i> . . . . .	201
<i>Trifolium</i> LINN. . . . .	174	„ „ ENDL. var. <i>sinensis</i> KING. . . . .	201
<i>Tripterygium</i> HOOK. f. . . . .	140	„ <i>lutea</i> A. GRAY . . . . .	200
„ <i>Wilfordii</i> HOOK. . . . .	140	„ <i>pilosa</i> BAKER. . . . .	201
„ <i>Bullockii</i> HANCE . . . . .	140	„ <i>reflexo-pilosa</i> HAYATA. . . . .	201
<i>Tristellateia</i> THOUARS . . . . .	111	„ <i>sinensis</i> HASSK. . . . .	201
„ <i>australasica</i> A. KICH. . . . .	111	„ <i>stipulata</i> HAYATA . . . . .	202
<i>Triumfetta</i> LINN. . . . .	108	<i>Violaceæ</i> . . . . .	58
„ <i>angulata</i> LAM. . . . .	109	„ . . . . .	(7)
„ <i>Bartramia</i> LINN. . . . .	109	<i>Viola</i> LINN. . . . .	58
„ <i>pilosa</i> ROTH. . . . .	109	„ <i>diffusa</i> GING. . . . .	60
„ <i>rhomboides</i> JACQ. . . . .	108	„ <i>formosana</i> HAYATA . . . . .	59
„ <i>trilocularis</i> ROXB. . . . .	109	„ <i>japonica</i> LANGSD. . . . .	61
<i>Trochodendron</i> SIEB. et ZUCC. . . . .	30	„ <i>japonica</i> var. <i>pekinensis</i> MAXIM. . . . .	61
„ <i>aralioides</i> SIEB. et ZUCC. . . . .	30	„ <i>kamtschatica</i> var. <i>pekinensis</i> REGEL. . . . .	62



<i>Viola Kawakamii</i> HAYATA .. .. .	58	„ <i>repens</i> W. et A. .. .. .	149
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„ <i>Patrinii</i> DC. . . . .	61	„ <i>triphylla</i> HAYATA .. .. .	146
„ <i>primulifolia</i> LOUR. .. .. .	61	„ <i>umbellata</i> HAYATA .. .. .	149
„ <i>siamensis</i> .. .. .	59	<b>Waltheria</b> LINN. . . . .	105
„ <i>Sieboldi</i> MAXIM. . . . .	60	„ <i>americana</i> LINN. . . . .	105
„ <i>tozanensis</i> HAYATA .. .. .	59	„ <i>indica</i> LINN. . . . .	105
„ <i>verecunda</i> A. GRAY .. .. .	61	„ <i>Makinoi</i> HAYATA .. .. .	105
<b>Vitis</b> LINN. . . . .	145	<b>Zanthoxylum</b> LINN. . . . .	118
„ <i>angustifolia</i> WALL. . . . .	147	„ <i>ailanthoides</i> SIEB. et ZUCC. . .	119
„ <i>angustifolia</i> HAYATA .. .. .	149	„ <i>cuspidatum</i> CHAMP. . . . .	119
„ <i>cantonensis</i> SEEM. . . . .	147	„ <i>Lamarckianum</i> .. .. .	117
„ <i>cordata</i> WALL. . . . .	149	„ <i>nitidum</i> DC. . . . .	119
„ <i>corniculata</i> BENTH. . . . .	146	„ <i>planispinum</i> SIEB. et ZUCC. . .	118
„ <i>dentata</i> HAYATA .. .. .	146	„ <i>pteleæfolium</i> CHAMP. . . . .	117
„ <i>flexuosa</i> THUNB. . . . .	147	„ <i>Roxburghianum</i> CHAMP. . . .	118
„ <i>formosana</i> HEMSL. . . . .	147	„ <i>setosum</i> HEMSL. . . . .	118
„ <i>heterophylla</i> THUNB. . . . .	148	„ <i>zeylanicum</i> DC. . . . .	118
„ <i>Heyneana</i> ROEM. et SCHULT. . .	149	<b>Zizyphus</b> JUSS. . . . .	142
„ <i>inconstans</i> MIQ. . . . .	148	„ <i>Jujuba</i> LAM. . . . .	142
„ <i>japonica</i> THUNB. . . . .	148	<b>Zigophylleæ</b> .. .. .	111
„ <i>Labrusca</i> LINN. . . . .	148	<b>Zornia</b> GMEL. . . . .	181
„ <i>Labrusca</i> THUNB. . . . .	149	„ <i>diphylla</i> PERS. . . . .	181
„ <i>indica</i> HOOK. et ARN. . . . .	149	<b>Zygophyllaceæ</b> .. .. .	9
„ <i>parvifolia</i> ROXB. . . . .	147		







ICONES PLANTARUM FORMOSANARUM.

I

PLATE I.

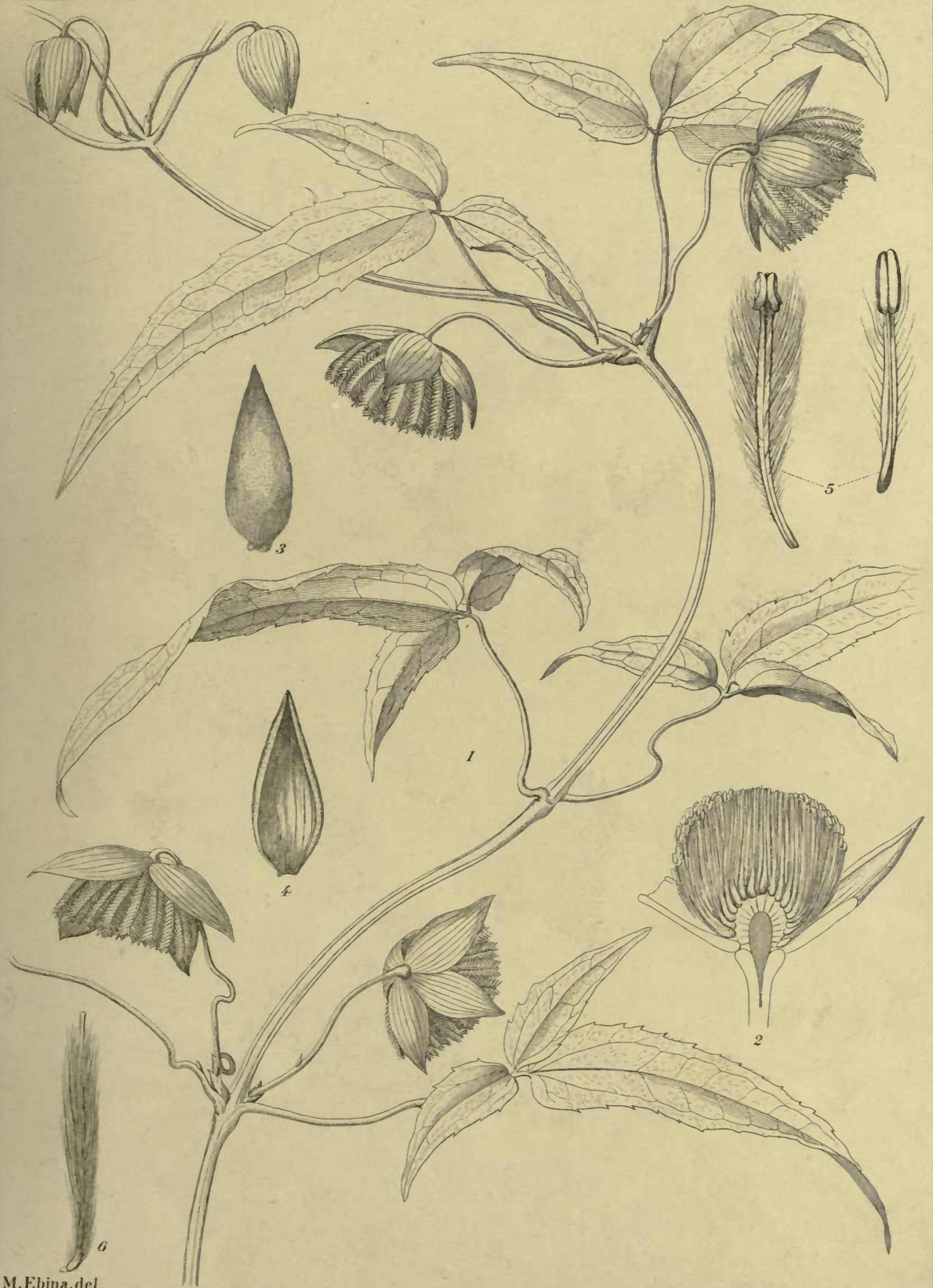


## PLATE I.

*Clematis Mori* HAYATA.

- Fig. 1. The plant.  
2. Longitudinal section of a flower.  
3. A sepal, seen from without.  
4. The same, seen from within.  
5. Stamens, one innermost, the other outermost one.  
6. A carpel.





M. Ebina. del.

T. Arai sculp.







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PLATE II.



## PLATE II.

*Clematis akensis* HAYATA.

- Fig. 1. The plant.  
2. A flower, longitudinal section.  
3. A sepal, seen from within and without.  
4. A stamen.  
5. A carpel.





M. Ebina, del.

K. Nakasawa sculp.







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PLATE III.



**PLATE III.**

*Clematis tozanensis* HAYATA.

- Fig. 1. The plant.  
2. A flower, longitudinal section.  
3. A stamen.  
4. A carpel.





M. Ebina, del.

K. Nakasawa sculp.

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PLATE IV.



**PLATE IV.**

*Clematis taiwaniana* HAYATA.

- Fig. 1. The plant.  
2. A flower-bud.  
3. A flower.  
4. A sepal, seen from within and without.  
5. A stamen.  
6. A carpel.  
7. The same, matured.











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PLATE V.



## PLATE V.

*Ranunculus taisanensis* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A sepal, seen from within.  
4. The same, seen from without.  
5. A petal, a glandulous body is seen at the base.  
6. A stamen.  
7. A young carpel.  
8. A mature carpel.





2



4



6



5



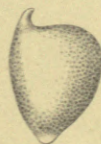
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8







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PLATE VI.

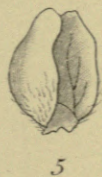
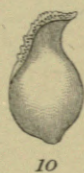
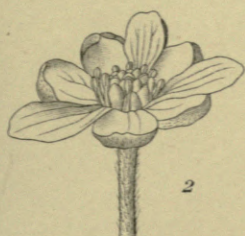


## PLATE VI.

*Ranunculus Kawakamii* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A sepal, seen from without.  
4. The same seen from side.  
5. The same, seen from another side.  
6. A petal, seen from within, a glandular point at the base of the lamina is seen.  
7. Another petal.  
8. A stamen.  
9. Syncarp.  
10. A carpel.











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PLATE VII.

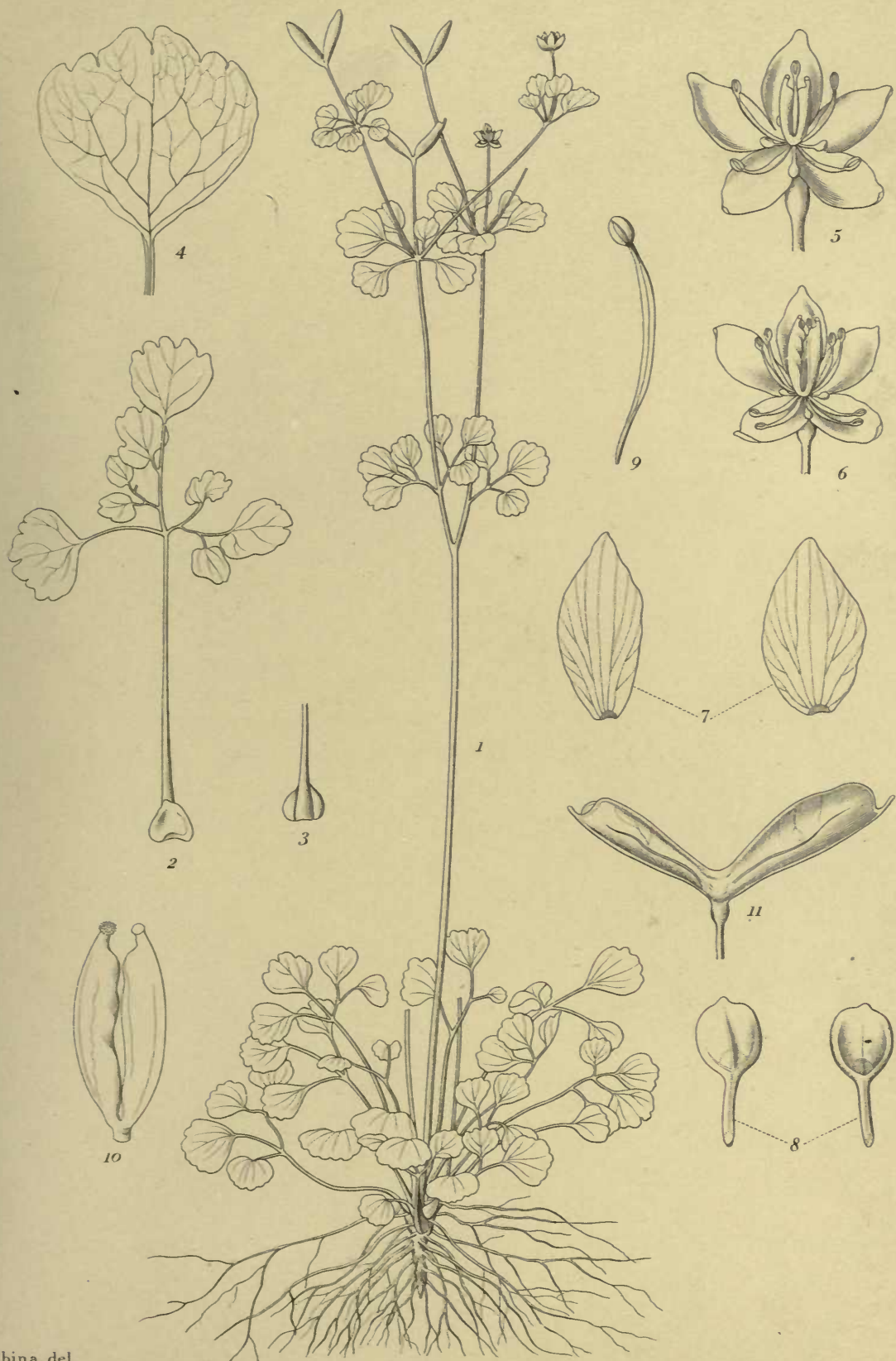


## PLATE VII.

*Isopyrum adiantifolium* HOOK. et THOMS. var. *arisanensis* HAYATA.

- Fig. 1. The plant.  
2. A radical leaf.  
3. Basal portion of a petiole.  
4. A leaflet.  
5. An open flower, with five stamens.  
6. Another form of flowers, with ten stamens.  
7. Sepals of different shape.  
8. A petal, seen from within and without.  
9. A stamen.  
10. An ovary, or two carpels.  
11. A fruit.











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PLATE VIII.

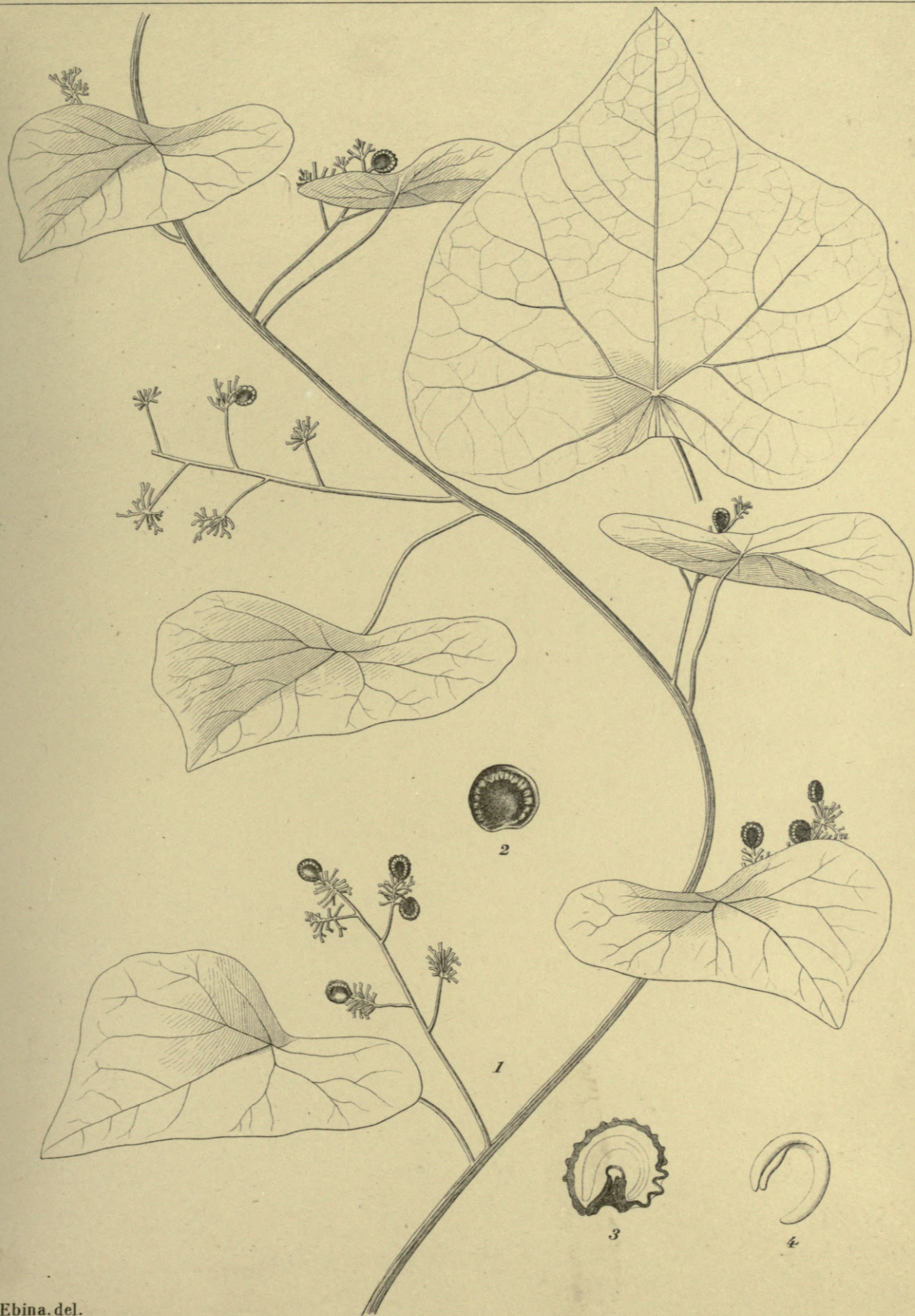


## PLATE VIII.

*Stephania tetrandra* MOORE.

- Fig. 1. A branch of the plant.  
2. A fruit.  
3. The same in vertical section.  
4. An embryo.











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PLATE IX.

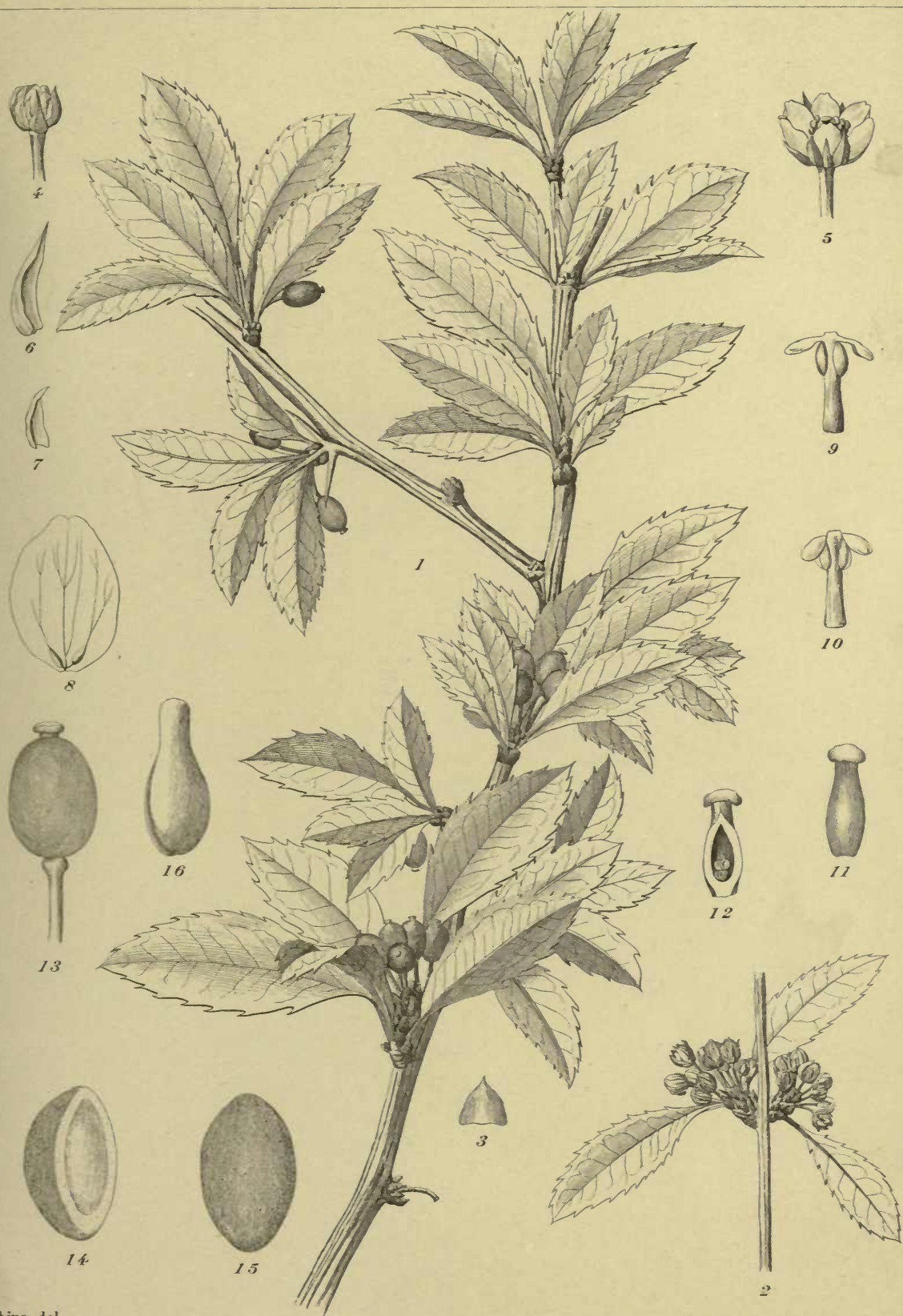


## PLATE IX.

*Berberis Kawakamii* HAYATA.

- Fig. 1. A branch of the plant.  
2. A portion of a branch with flower-clusters.  
3. A perule.  
4. A flower-bud.  
5. An open flower.  
6. and 7. Sepals of different shapes.  
8. A petal, two glandular bodies are seen at the base of the petal.  
9. and 10. A stamen seen from within and without.  
11. An ovary.  
12. The same, in vertical section.  
13. A fruit.  
14. and 15. A seed, seen from different sides.  
16. An embryo.











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PLATE X.

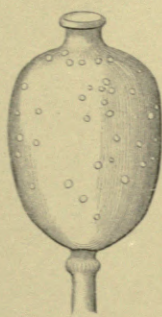


## PLATE X.

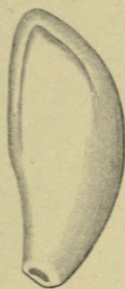
*Berberis morrisonensis* HAYATA.

- Fig. 1. A branch of the plant.  
2. A leaf.  
3. A fruit.  
4. A seed.  
5. An embryo.

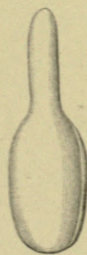




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ICONES PLANTARUM FORMOSANARUM.

PLATE XI.

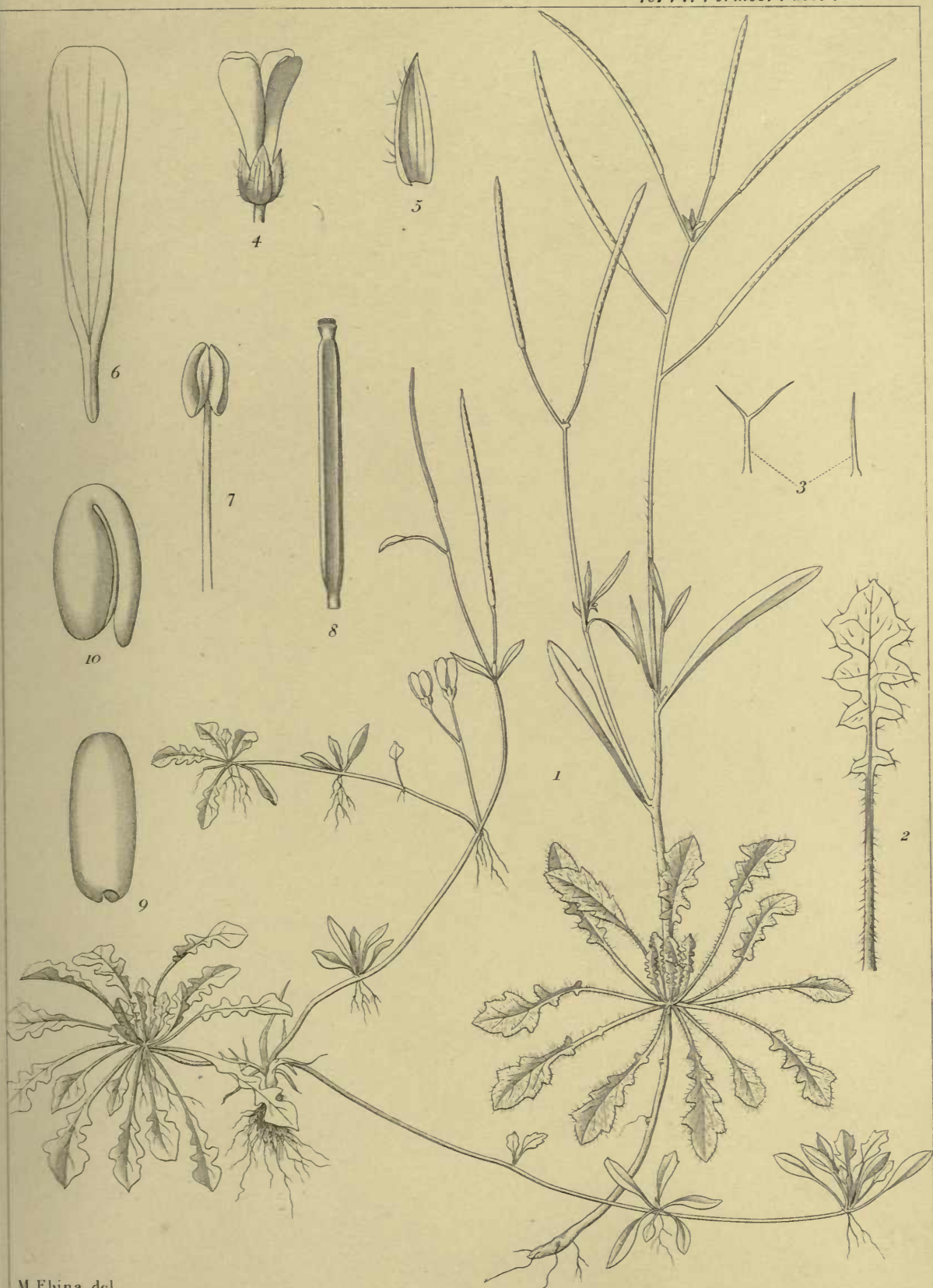


## PLATE XI.

*Arabis morrisonensis* HAYATA.

- Fig. 1. The plant.  
2. A radical leaf.  
3. Hairs on the leaf, one is simple, the other forked.  
4. A flower.  
5. A sepal.  
6. A petal.  
7. A stamen.  
8. An ovary.  
9. A seed.  
10. An embryo.











ICONES PLANTARUM FORMOSANARUM.

PLATE XII.

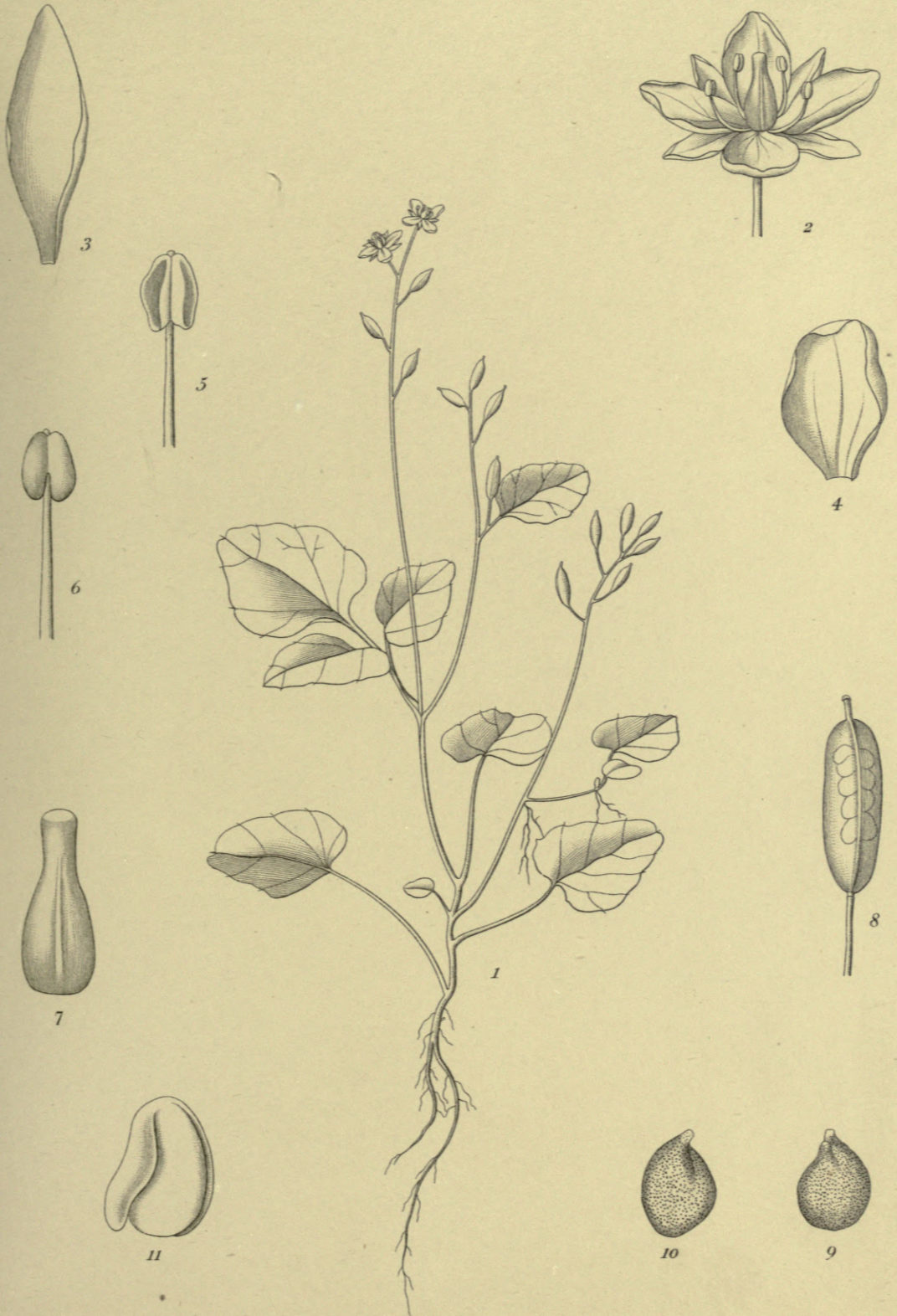


## PLATE XII.

*Cochlearia formosana* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A sepal.  
4. A petal.  
5. A stamen.  
6. The same, seen from another side.  
7. An ovary.  
8. A fruit.  
9. A seed.  
10. The same, seen from another side.  
11. An embryo.





M. Ebina, del.

K. Nakasawa sculp.







ICONES PLANTARUM FORMOSANARUM.

PLATE XIII.

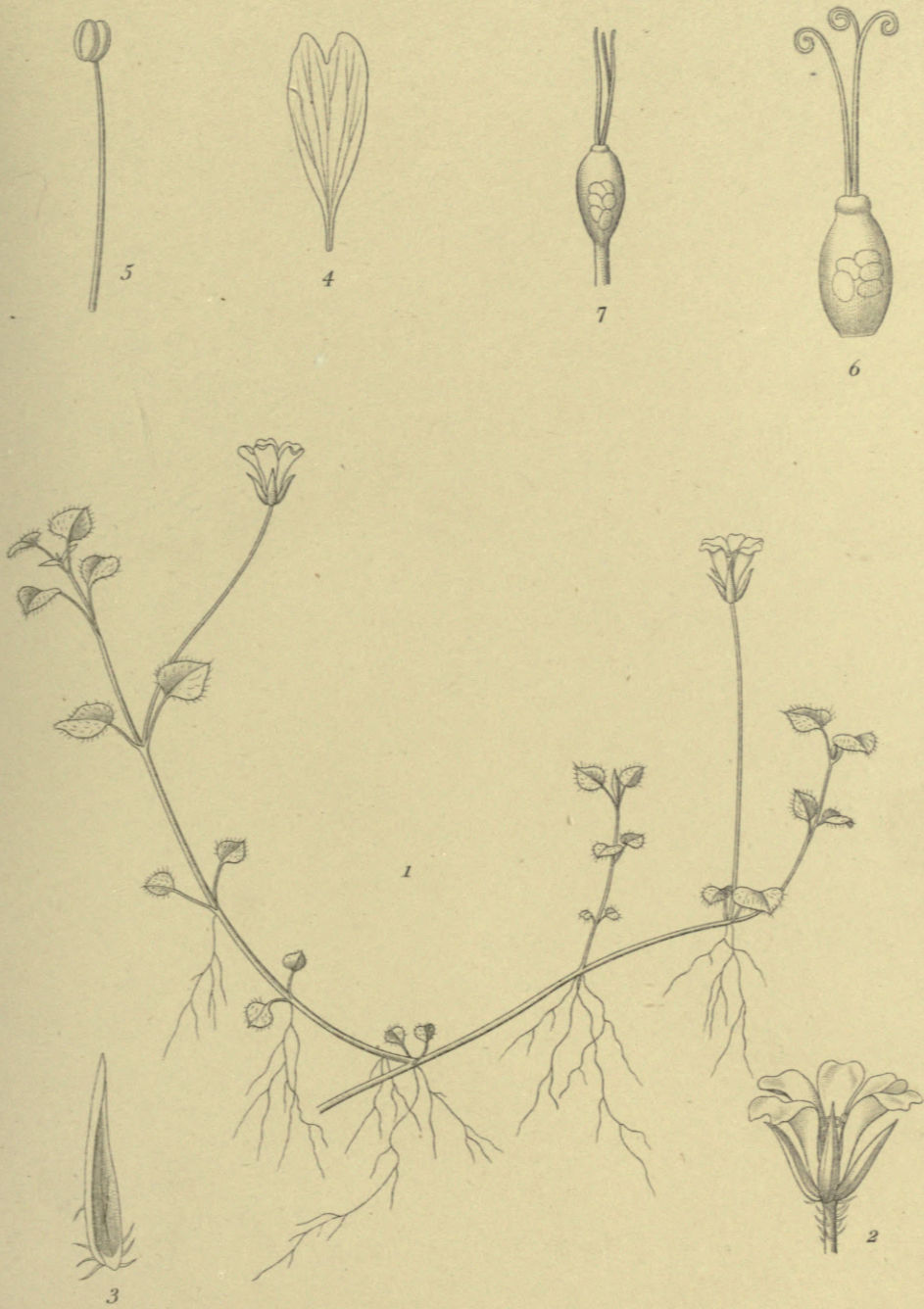


## PLATE XIII.

*Cerastium arisanense* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A sepal.  
4. A petal.  
5. A stamen.  
6. An ovary.  
7. Another form of an ovary with erect styles.











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PLATE XIV.

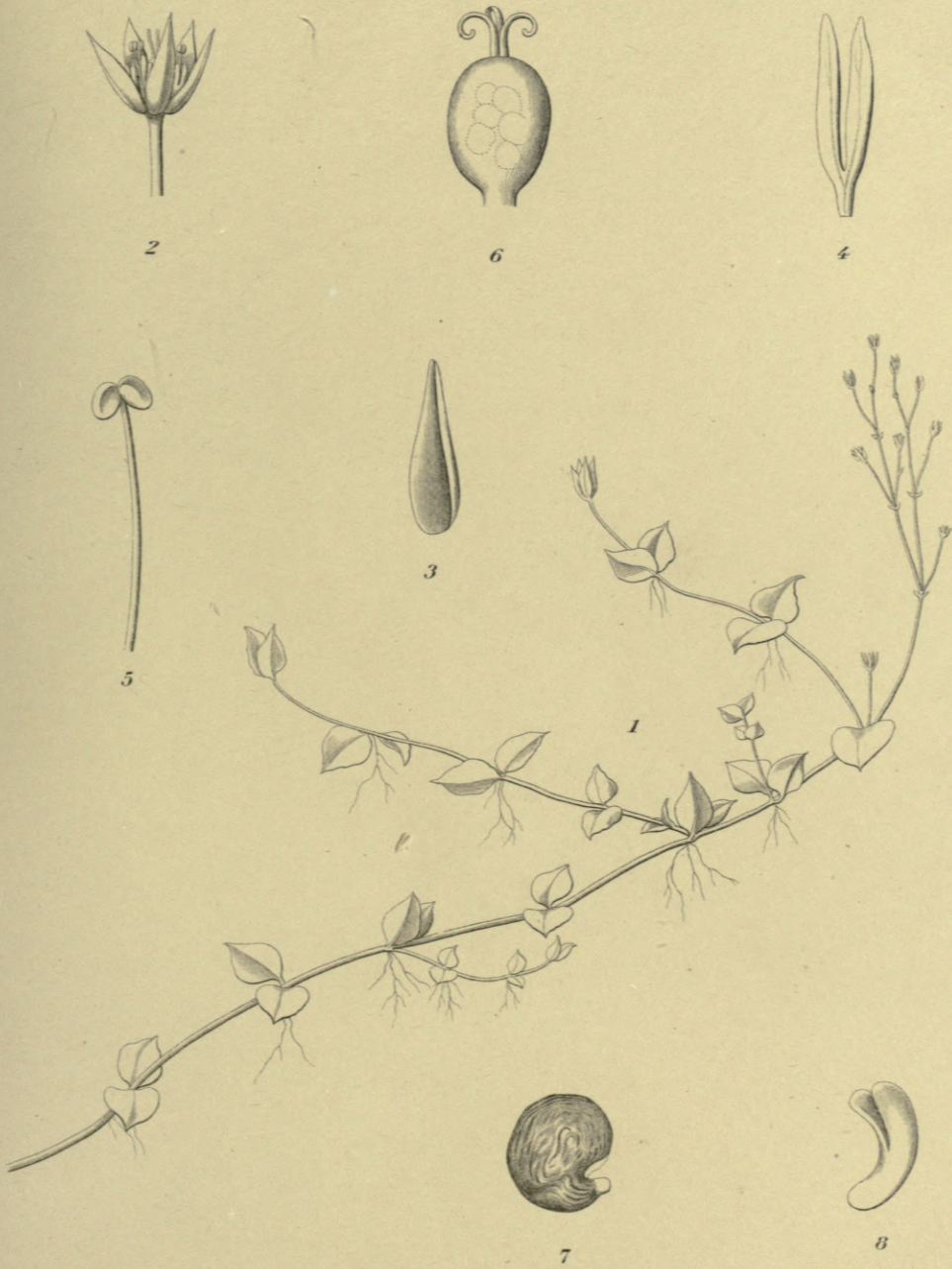


## PLATE XIV.

*Stellaria micrantha* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A sepal.  
4. A petal.  
5. A stamen.  
6. An ovary.  
7. A seed.  
8. An embryo.











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PLATE XV.



## PLATE XV.

*Hypericum acutisepalum* HAYATA.

- Fig. 1. A branch of the plant.
2. A portion of a branch, showing the attachment of the flowers, perules are shown.
3. An open flower.
4. A sepal.
5. Petals of different shapes.
6. Stamens in bundle.
7. A stamen.
8. The same, seen from another side.
9. An ovary.
10. An apical portion of a style, stigmatic portion is shown.











ICONES PLANTARUM FORMOSANARUM.

PLATE XVI.



## PLATE XVI.

*Hypericum simplicistylum* HAYATA.

- Fig. 1. A branch of the plant.  
2. A leaf.  
3. A flower-bud.  
4. An open flower.  
5. A sepal.  
6. A petal.  
7. A stamen, seen from within and without.  
8. An ovary.  
9. Apical portion of a style, stigmatic portion is shown.











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PLATE XVII.



## PLATE XVII.

*Hypericum randaiense* HAYATA.

- Fig. 1. The plant.  
2. A leaf.  
3. A flower.  
4. A sepal.  
5. A petal.  
6. A stamen, seen from within.  
7. The same, seen from without.  
8. An ovary.











ICONES PLANTARUM FORMOSANARUM.

PLATE XVIII.



**PLATE XVIII.**

*Hypericum Nagasawai* HAYATA.

- Fig. 1. A branch of the plant.  
2.—a. A flower.  
2.—b. The same, seen from a little below.  
3. A sepal.  
4. A petal.  
5. A stamen.  
6. The same, seen from side.  
7. An ovary.











ICONES PLANTARUM FORMOSANARUM.

PLATE XIX.



**PLATE XIX.**

*Ilex parvifolia* HAYATA.

- Fig. 1. A branch of the plant.  
2. A fruit.  
3. A sepal.  
4. A sepal of another form.  
5. A seed.  
6. The same, seen from another side.  
7. The same, in vertical section.  
8. The same, in cross section.





M. Ebina, del.

K. Nakasawa sculp.

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PLATE XX.



## PLATE XX.

*Euonymus Spraguei* HAYATA.

- Fig. 1. A branch of the plant.  
2. A fruit seen from side.  
3. The same, seen from a little below.  
4. A seed.  
5. An anomalous embryo with four cotyledons.











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PLATE XXI.



## PLATE XXI.

*Prunus taiwaniana* HAYATA.

- Fig. 1. A branch of the plant with fruits.  
2. Another branch with flowers.  
3. A leaf, with stipules.  
4. A flower.  
4a. A lobe of the calyx.  
5. A petal.  
6. A stamen seen from within and without.  
7. A pistil.  
8. A fruit.











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PLATE XXII.

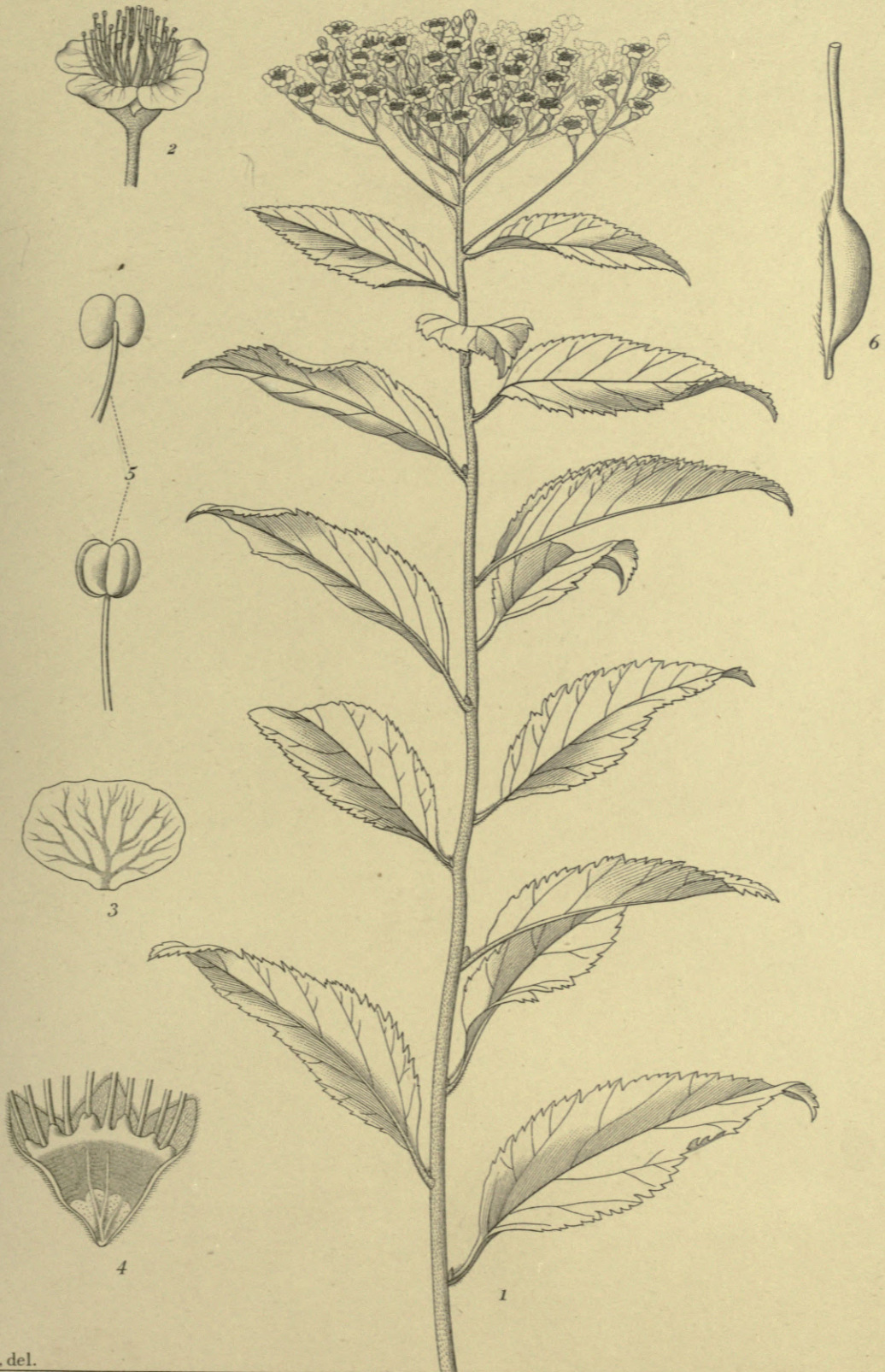


**PLATE XXII.**

*Spiræa formosana* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A petal.  
4. Calyx, in longitudinal section.  
5. A stamen, seen from within and without.  
6. A carpel.





M. Ebina, del.

K. Nakasawa sculp.







ICONES PLANTARUM FORMOSANARUM.

PLATE XXIII.



**PLATE XXIII.**

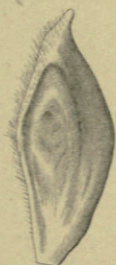
*Spiraea morrisonensis* HAYATA.

- Fig. 1. The plant.  
2. A leaf.  
3. A petal.  
4. A lobe of a calyx.  
5. A flower.  
6. A carpel.  
7. A seed.  
8. An embryo.





5



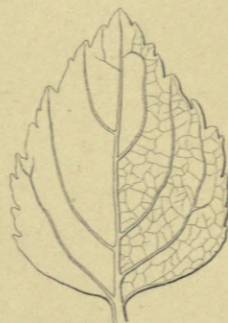
6



7



8



2



1



4



3







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PLATE XXIV.



## PLATE XXIV.

*Rubus conduplicatus* DUTHIE.

- Fig. 1. The plant.  
2. A bract.  
3. A perule.  
4. A flower.  
5. The same in vertical section.  
6. A fructiferous flower in vertical section.  
7. A calyx-lobe.  
8. A petal.  
9. A stamen, seen from within and without.





M.Ebina. del.

T.Arai sculp.







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PLATE XXV.

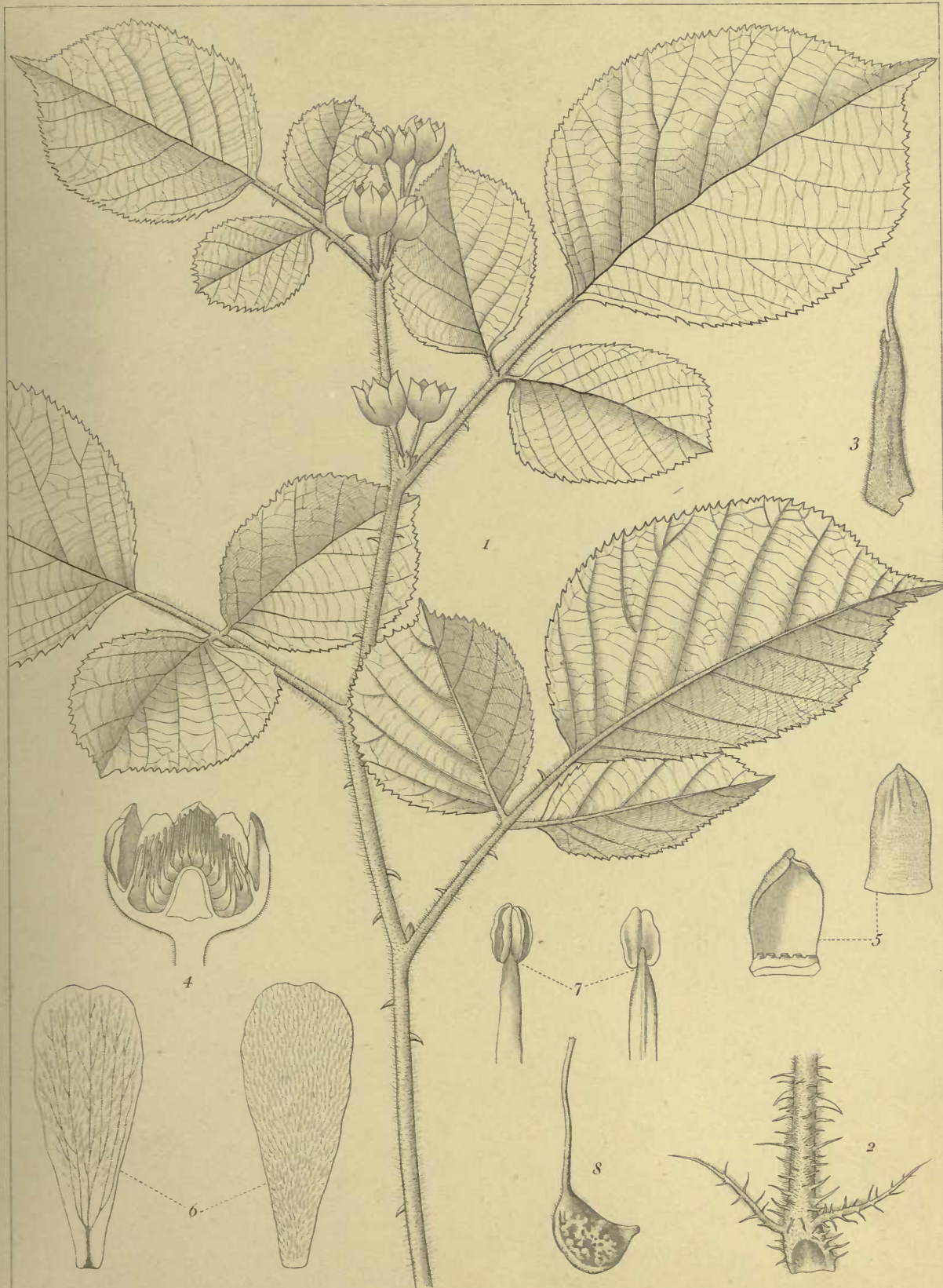


## PLATE XXV.

*Rubus fasciculatus* DUTHIE.

- Fig. 1. The plant.  
2. Basal portion of a petiole, showing the stipules.  
3. A bract.  
4. A flower in vertical section.  
5. A calyx-lobe, seen from within and without.  
6. A petal, seen from within and without.  
7. A stamen, seen from within and without.  
8. A carpel.





M. Ebina, del.

K. Nakasawa sculp.

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PLATE XXVI.

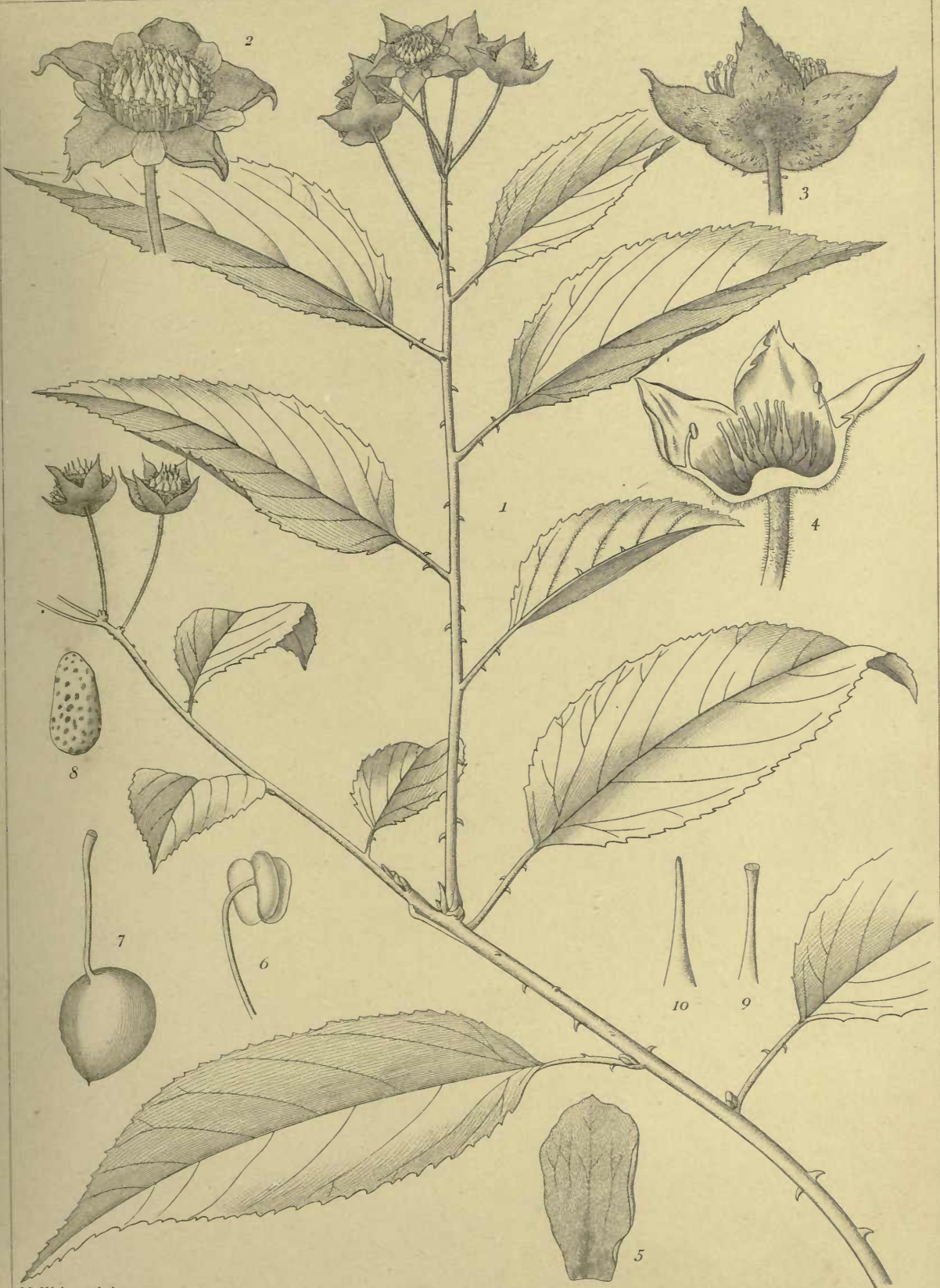


**PLATE XXVI.**

*Rubus Kawakamii* HAYATA.

- Fig. 1. A branch of the plant.  
2. A flower, seen from a little above.  
3. The same, seen from a little below.  
4. The same, in vertical section.  
5. A petal.  
6. A stamen.  
7. A carpel.  
8. A seed.  
9. A prickly with a truncate apex.  
10. Another form of a prickly with an acute apex.





M. Ebina, del.

K. Nakasawa sculp.







ICONES PLANTARUM FORMOSANARUM.

PLATE XXVII.



**PLATE XXVII.**

*Rubus nantoensis* HAYATA.

- Fig. 1. The plant.  
2. A stipule.  
3. A bract.  
4. Another bract.  
5. A flower in vertical section.  
6. A calyx-lobe, seen from within and without.  
7. A stamen, seen from within and without.  
8. A carpel.







## PLATE XXVIII.

*Rubus retusipetala* HAYATA.

- Fig. 1. A branch of the plant.  
2. A flower, seen from a little above.  
3. The same, seen from a little below.  
4. The same, in vertical section.  
5. A lobe of a calyx, seen from within and without.  
6. Petal.  
7. Stamen, seen from a different side.  
8. A carpel.











ICONES PLANTARUM FORMOSANARUM.

PLATE XXIX.



## PLATE XXIX.

*Rubus shinkoensis* HAYATA.

- Fig. 1. A branch of the plant.  
2. A flower, seen from a little above.  
3. The same, seen from a little below.  
4. The same, in vertical section.  
5. A lobe of a calyx.  
6. A petal.  
7. A stamen.  
8. A carpel.  
9. Stigmatic portion of a style.











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PLATE XXX.



## PLATE XXX.

*Rosa morrisonensis* HAYATA.

- Fig. 1. A branch of the plant.  
2. A leaf.  
3. A leaflet.  
4. A flower, petals off.  
5. The same, in vertical section.  
6. A calyx-lobe.  
7. A stamen, seen from within and without.  
8. A carpel.





M.Ebina, del.

F.Fujisawa sculp.







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PLATE XXXI.

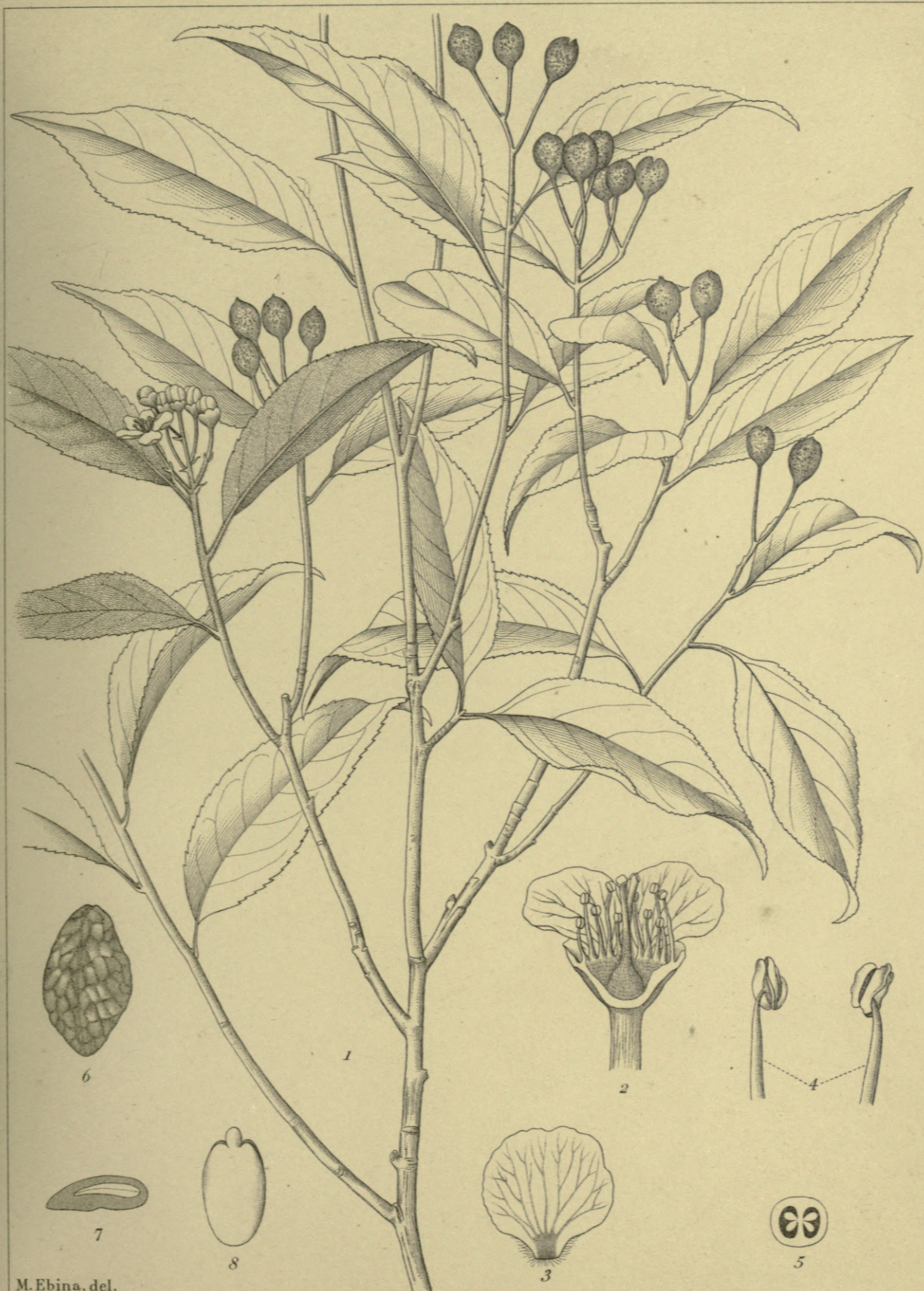


**PLATE XXXI.**

*Photinia taiwanensis* HAYATA.

- Fig. 1. The plant.  
2. A flower in vertical section.  
3. A petal.  
4. A stamen, seen from within and without.  
5. Transversal section of an ovary.  
6. A stone.  
7. Cross section of a stone.  
8. An embryo.





M. Ebina, del.

K. Nakasawa sculp.

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PLATE XXXII.

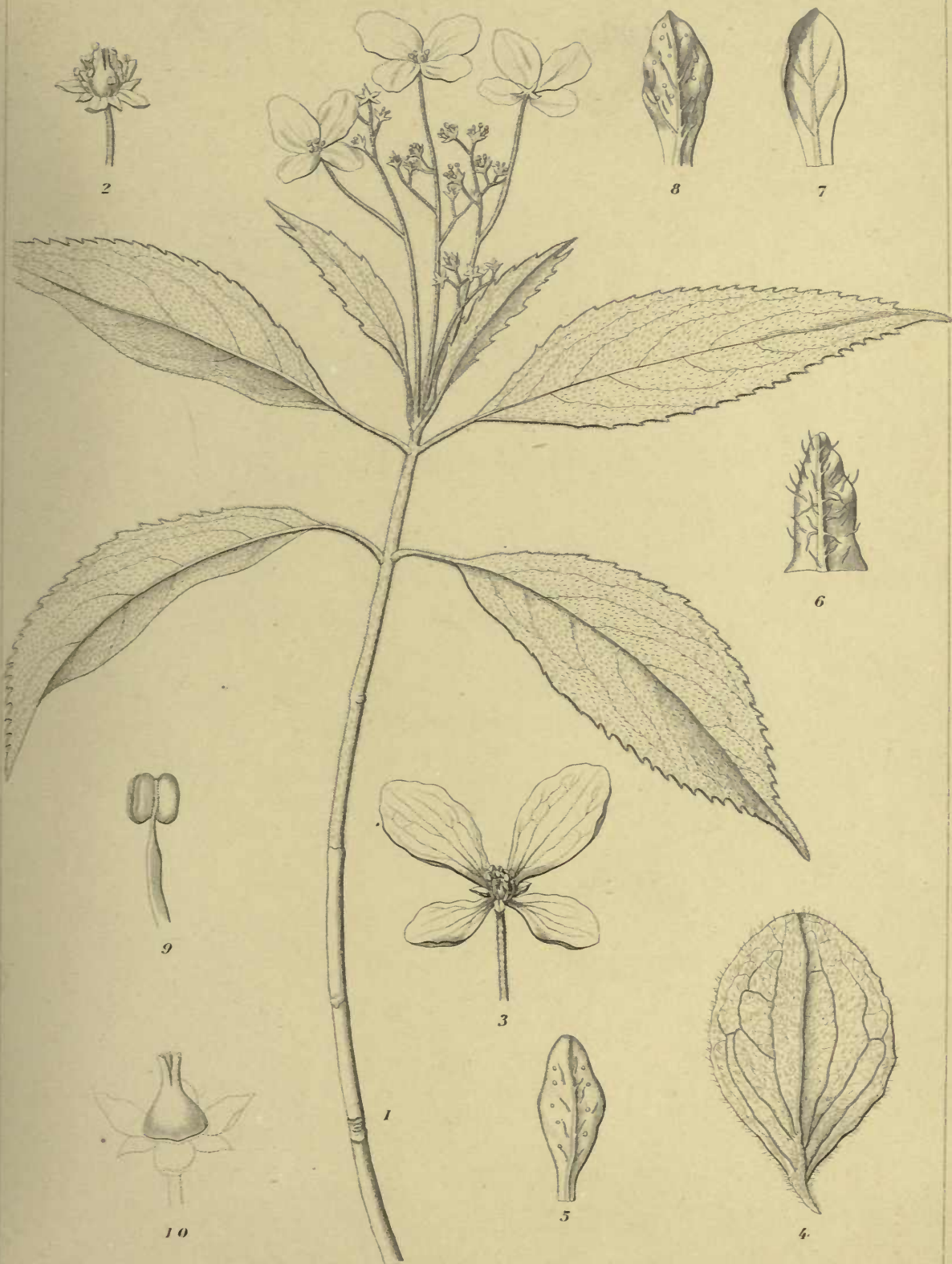


**PLATE XXXII.**

*Hydrangea angustifolia* HAYATA.

- Fig. 1. The plant.  
2. A flower (fertile).  
3. A marginal flower.  
4. A sepal of the same.  
5. A petal of the same.  
6. A sepal of the fertile flower.  
7. A petal of the same flower.  
8. The same, seen from without.  
9. A stamen.  
10. An ovary.











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PLATE XXXIII.



### PLATE XXXIII.

*Deutzia taiwanensis* HAYATA.

- Fig. 1. A branch of the plant.  
2a. A flower-bud.  
2b. An open flower.  
3. The same in vertical section.  
4. A lobe of a calyx.  
5. A stellate hair on the calyx.  
6. A petal.  
7. Hairs beset on the petal.  
8. A stamen.  
9. A style.





M. Ebina, del.

K. Nakasawa sculp.

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PLATE XXXIV.

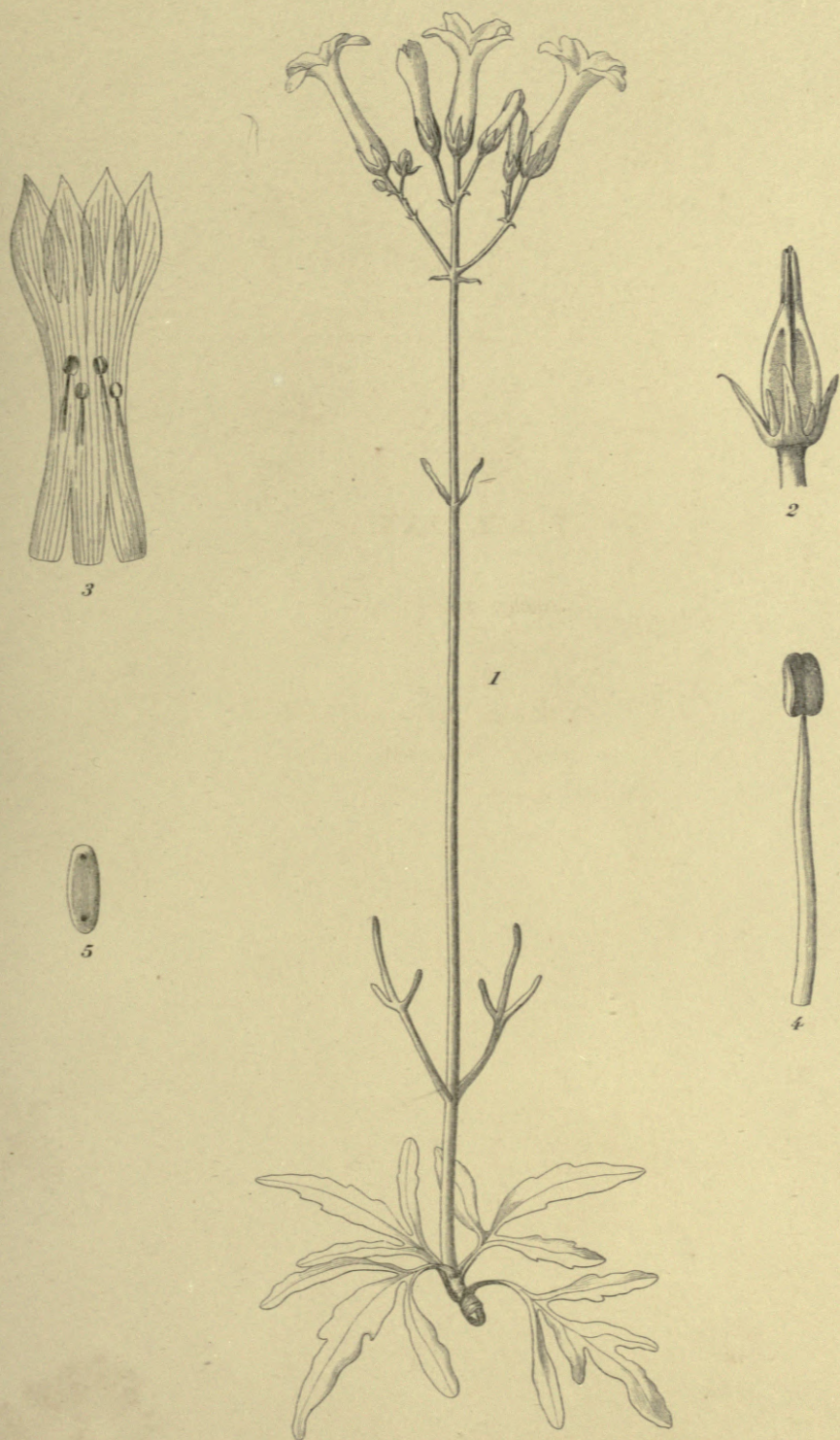


**PLATE XXXIV.**

*Kalanchoë gracilis* HEMSL.

- Fig. 1. The plant.  
2. A flower, corolla taken off.  
3. Corolla, expanded.  
4. A stamen.  
5. A seed.











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PLATE XXXV.

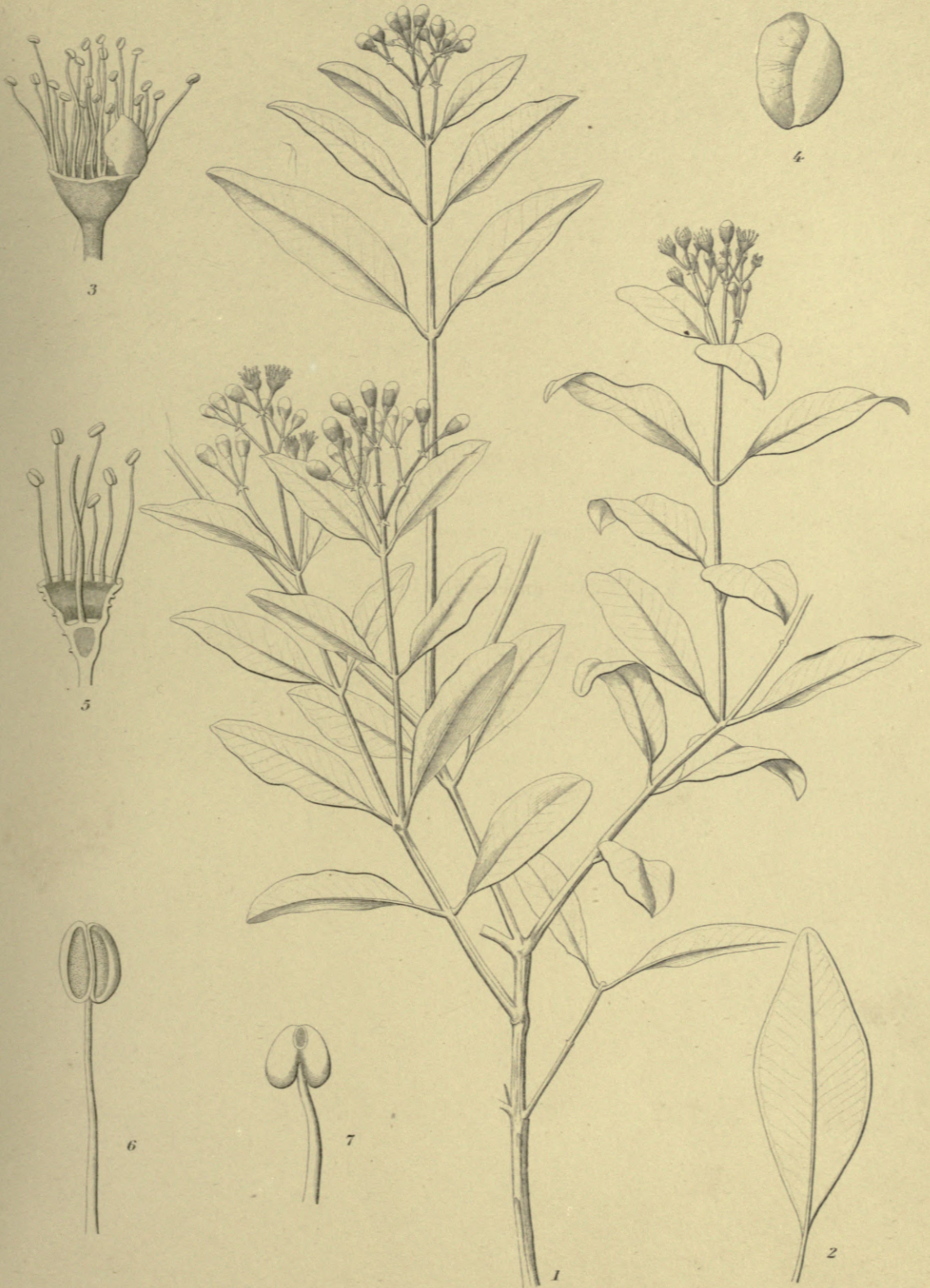


**PLATE XXXV.**

*Eugenia acutisepala* HAYATA.

- Fig. 1. A branch of the plant.  
2. A leaf.  
3. A flower.  
4. A petal.  
5. The same in section, petals taken off.  
6. A stamen.  
7. The same, seen from another side.











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PLATE XXXVI.

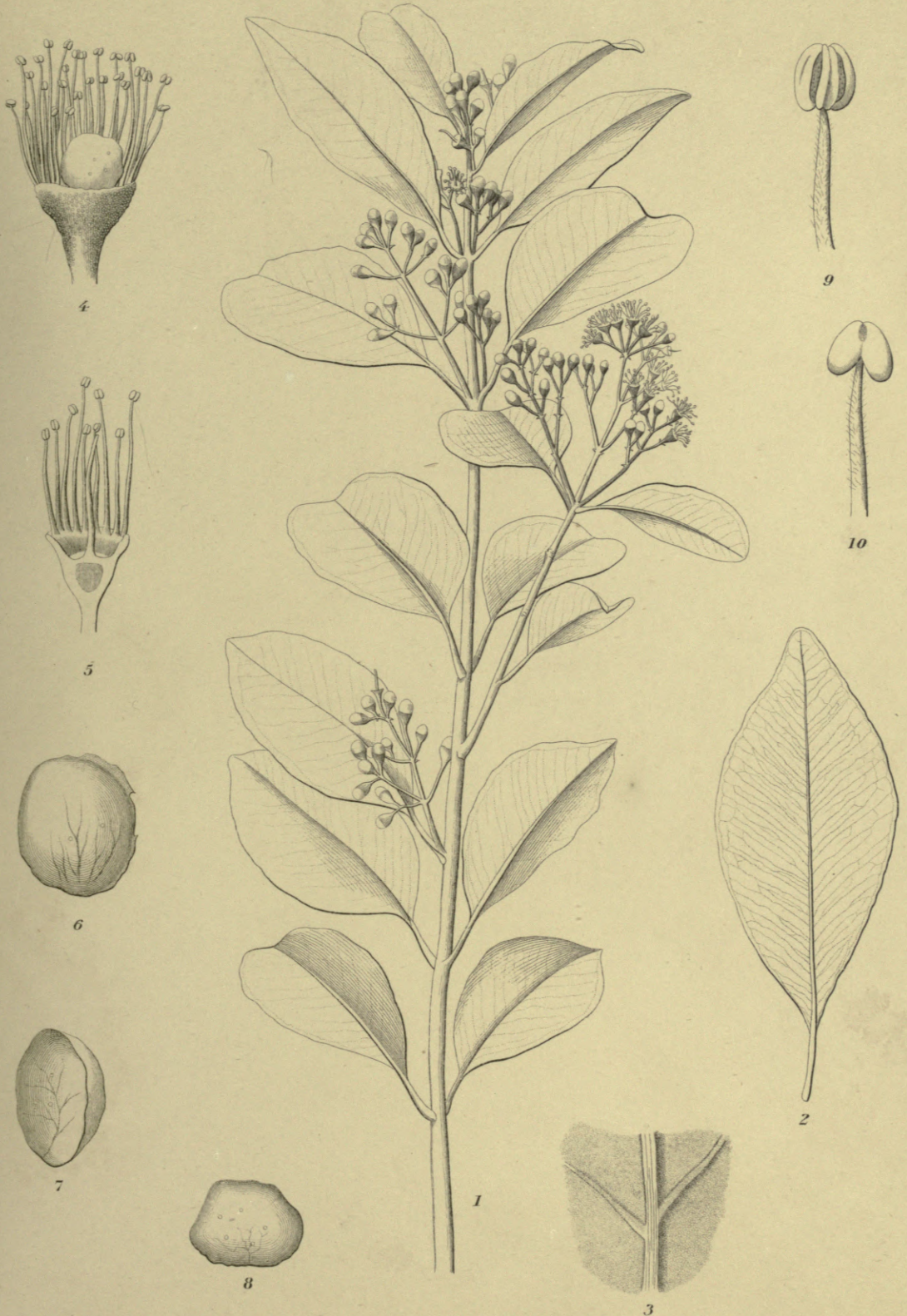


## PLATE XXXVI.

*Eugenia formosana* HAYATA.

- Fig. 1. A branch of the plant.  
2. A leaf.  
3. A part of the lower surface of a leaf, strongly magnified.  
4. A flower.  
5. The same in vertical section.  
6. A petal.  
7. The same seen from side.  
8. A stamen, seen from within.  
9. The same, seen from without.











ICONES PLANTARUM FORMOSANARUM.

PLATE XXXVII.

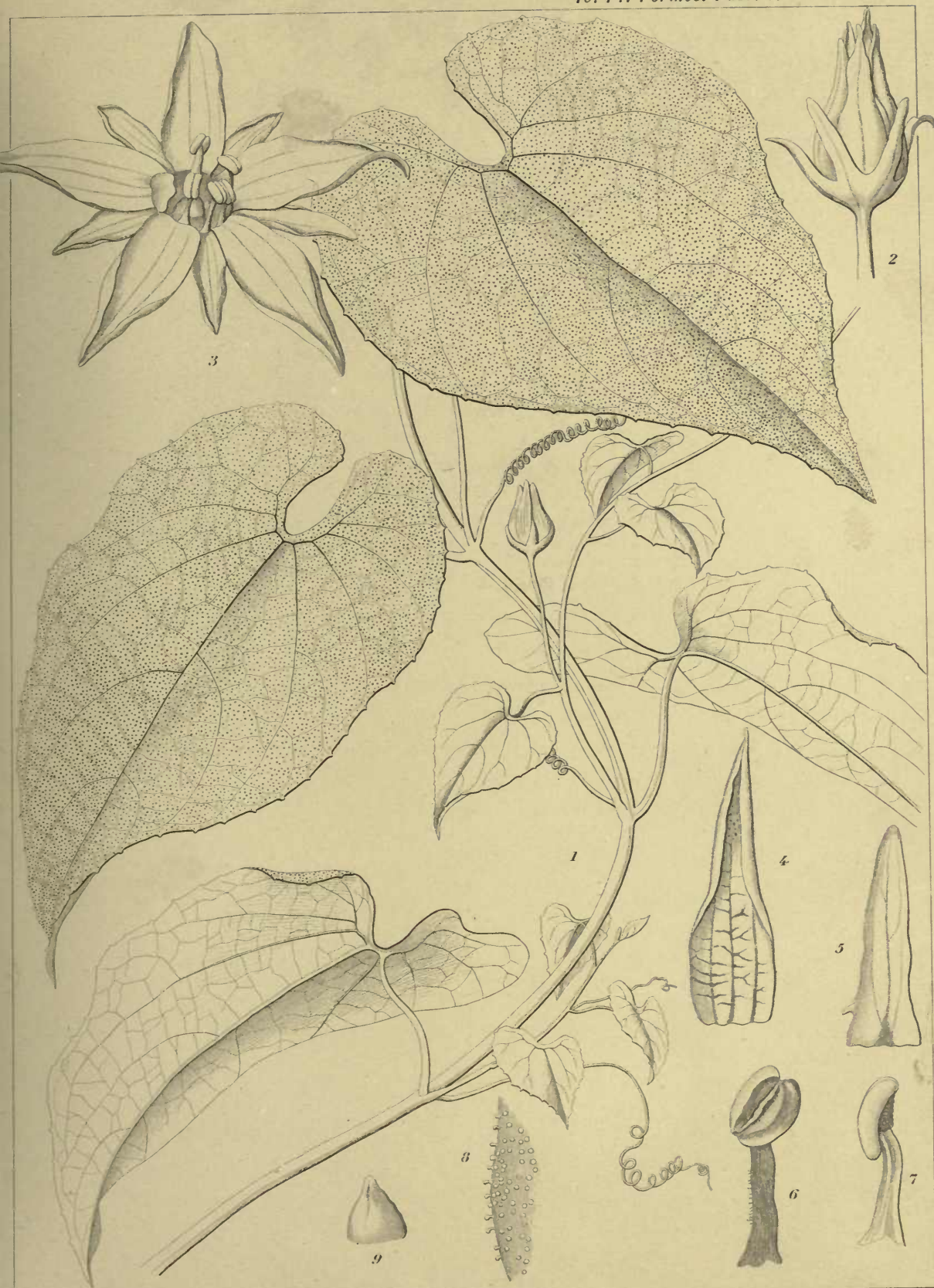


## PLATE XXXVII.

*Thladiantha punctata* HAYATA.

- Fig. 1. A branch of the plant.  
2. A flower-bud.  
3. An open flower.  
4. A petal, seen from within.  
5. A sepal.  
6. A stamen, seen from within.  
7. The same, seen from side.  
8. A portion of a petal, showing its glandular surface, strongly magnified.  
9. A rudimentary ovary.











ICONES PLANTARUM FORMOSANARUM.

PLATE XXXVIII.



**PLATE XXXVIII.**

*Alsomitra integrifoliola* HAYATA.

- Fig. 1. The plant.  
2. A flower-bud.  
3. A flower.  
4. The same, seen from back.  
5. A calyx-lobe.  
6. A petal.  
7. A stamen, seen from within and without.





M.Ebina. del.

T.Arai sculp.

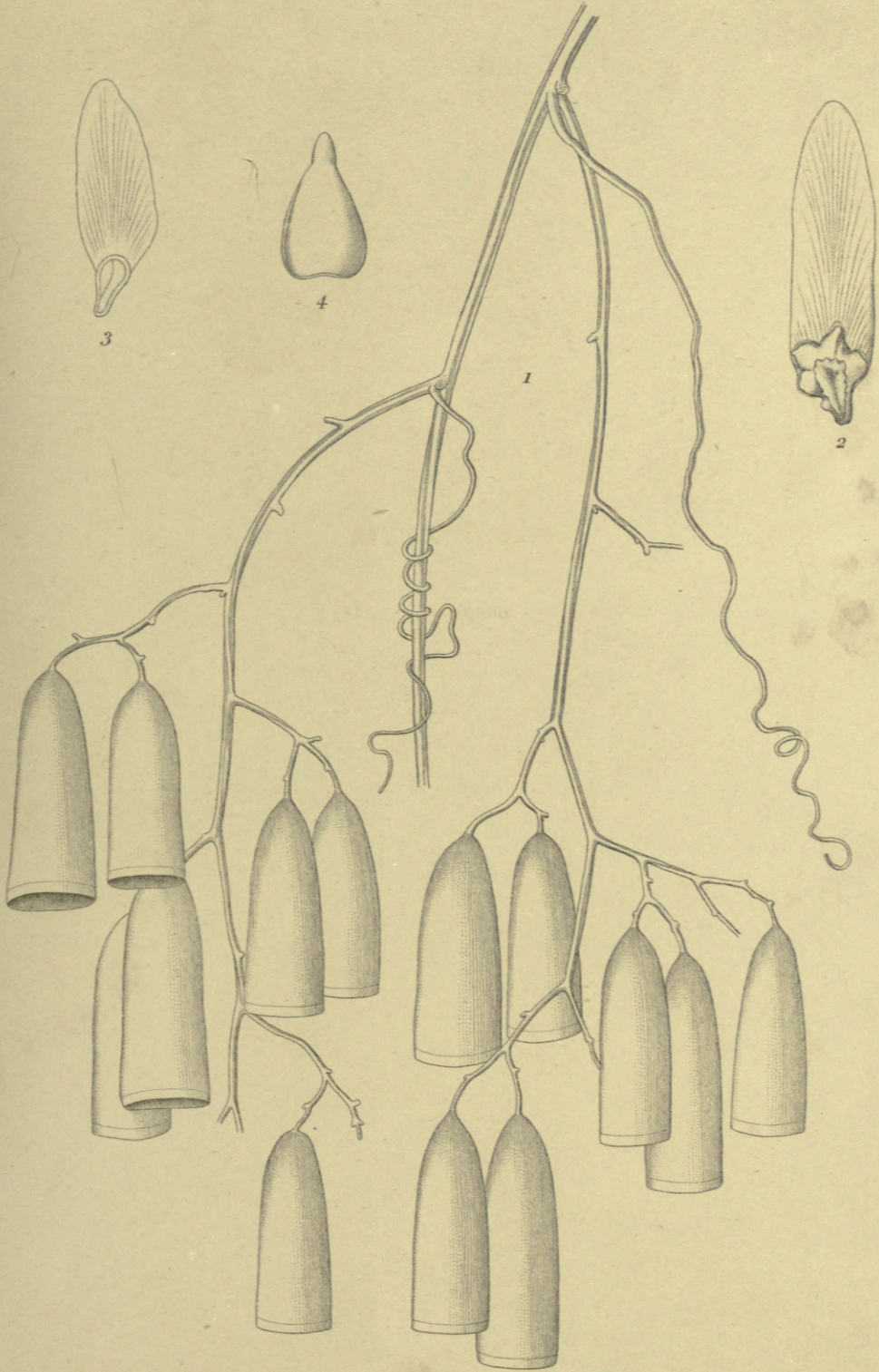


**PLATE XXXIX.**

*Alsomitra integrifolia* HAYATA.

- Fig. 1. A fructiferous panicle.  
2. A mature seed.  
3. A præmature one.  
4. An embryo.











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PLATE XL.

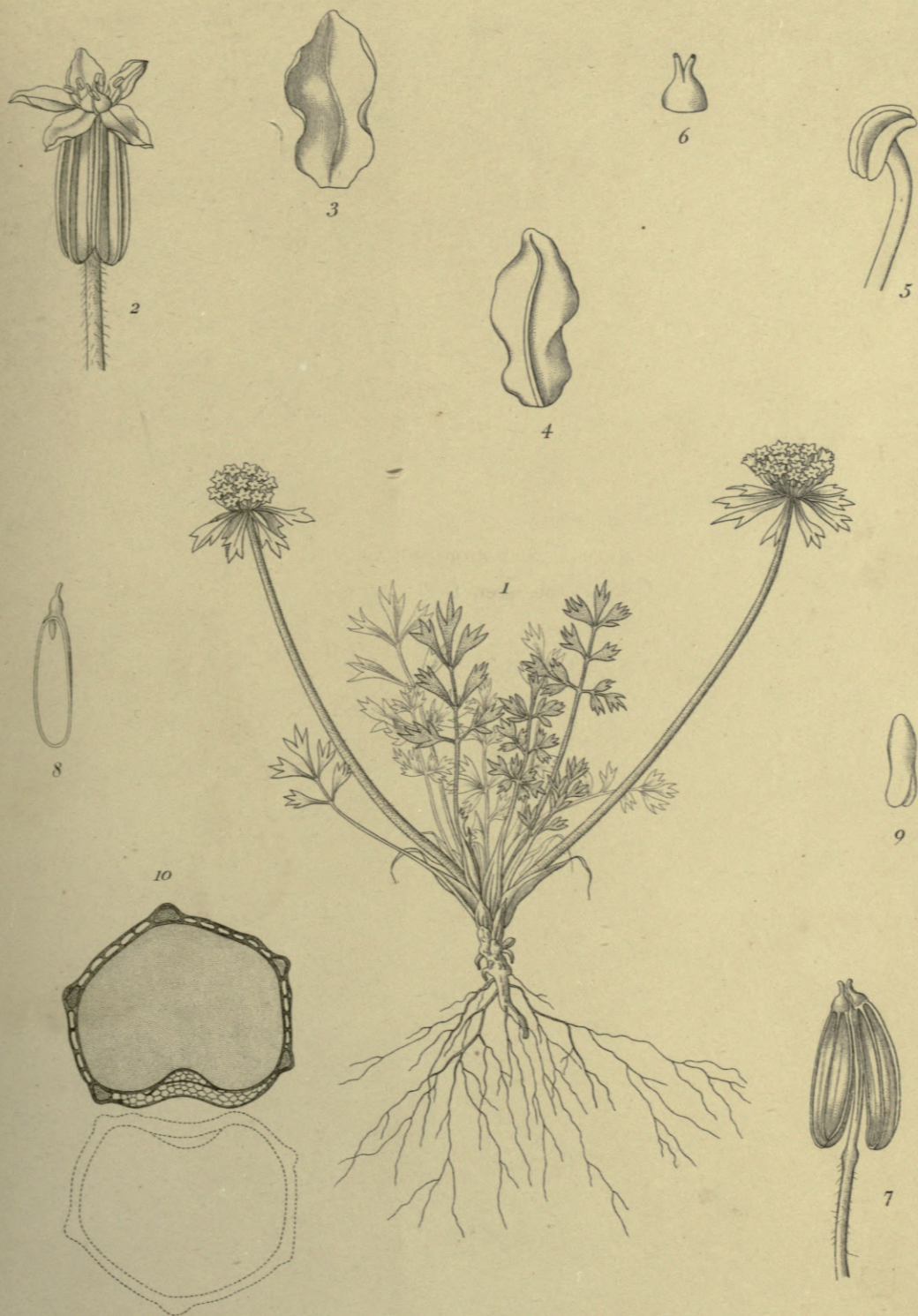


## PLATE XL.

*Oreomyrrhis involucrata* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A petal, seen from within.  
4. The same, seen from without.  
5. A stamen.  
6. A stylodium.  
7. A fruit.  
8. A carpel, in vertical section.  
9. An embryo.  
10. Vertical section of a fruit, showing the vittæ on the margin.











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